

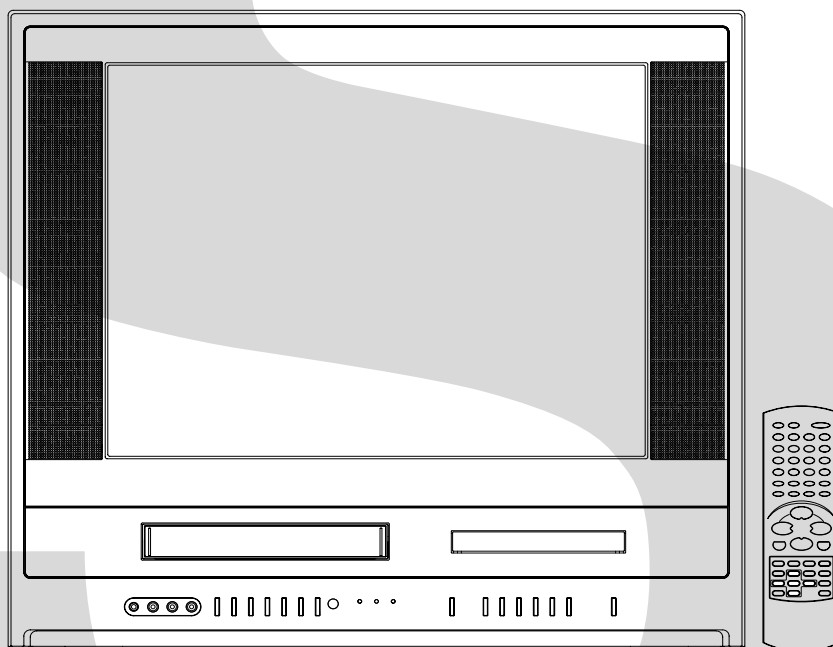
# TOSHIBA

FILE NO. 140-200409

## SERVICE MANUAL

### COLOR TELEVISION/ VIDEO CASSETTE RECORDER/ DVD VIDEO PLAYER

# ***MW20FP1***



## CAUTION

THIS DIGITAL VIDEO PLAYER EMPLOYS A LASER SYSTEM.

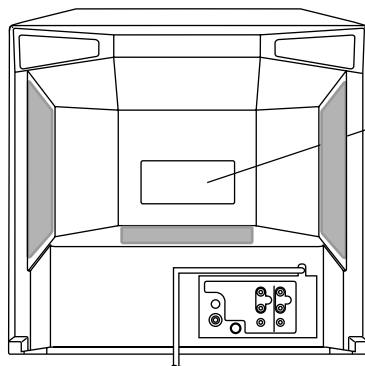
TO ENSURE PROPER USE OF THIS PRODUCT, PLEASE READ THIS SERVICE MANUAL CAREFULLY AND RETAIN FOR FUTURE REFERENCE. SHOULD THE UNIT REQUIRE MAINTENANCE, CONTACT AN AUTHORIZED SERVICE LOCATION-SEE SERVICE PROCEDURE.

USE OF CONTROLS, ADJUSTMENTS OR THE PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

TO PREVENT DIRECT EXPOSURE TO LASER BEAM, DO NOT TRY TO OPEN THE ENCLOSURE. VISIBLE LASER RADIATION MAY BE PRESENT WHEN THE ENCLOSURE IS OPENED. DO NOT STARE INTO BEAM.

### Location of the required Marking

The rating sheet and the safety caution are on the rear of the unit.



CERTIFICATION: COMPLIES WITH FDA  
RADIATION PERFORMANCE STANDARDS,  
21 CFR SUBCHAPTER J.

## PREPARATION OF SERVICING

The laser diode used for a pickup head may be destroyed with external static electricity.

Moreover, even if it is operating normally after repair, when static electricity discharge is received at the time of repair, a life of product may become short.

Please perform the following measure against static electricity, be careful of destruction of a laser diode enough at the time of repair, and work.

- It works on the desk which performed measures against static electricity, such as conductive mat.
- Soldering iron with ground wire or ceramic type is used.
- A worker needs to use a ground conductive wrist strap for body.

## SERVICING NOTICES ON CHECKING

### 1. KEEP THE NOTICES


As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

### 2. AVOID AN ELECTRIC SHOCK

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.

### 3. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.

Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a  mark, the designated parts must be used.

### 4. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

### 5. TAKE CARE TO DEAL WITH THE CATHODE-RAY TUBE

In the condition that an explosion-proof cathode-ray tube is set in this equipment, safety is secured against implosion. However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.

### 6. AVOID AN X-RAY

Safety is secured against an X-ray by considering about the cathode-ray tube and the high voltage peripheral circuit, etc.

Therefore, when repairing the high voltage peripheral circuit, use the designated parts and make sure not modify the circuit.

Repairing except indicates causes rising of high voltage, and it emits an X-ray from the cathode-ray tube.

### 7. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

#### (INSULATION CHECK PROCEDURE)

1. Unplug the plug from the AC outlet.
2. Remove the antenna terminal on TV and turn on the TV.
3. Insulation resistance between the cord plug terminals and the external exposure metal **[Note 2]** should be more than 1M ohm by using the 500V insulation resistance meter **[Note 1]**.
4. If the insulation resistance is less than 1M ohm, the inspection repair should be required.

#### **[Note 1]**

If you have not the 500V insulation resistance meter, use a Tester.

#### **[Note 2]**

External exposure metal: Antenna terminal

## HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the VERSION LETTER.)

### 1. MODEL NUMBER and VERSION LETTER

The MODEL NUMBER can be found on the back of each product and the VERSION LETTER can be found at the end of the SERIAL NUMBER.

### 2. PART NO. and DESCRIPTION

You can find it in your SERVICE MANUAL.

# IMPORTANT SAFEGUARDS

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## 1. READ INSTRUCTIONS

All the safety and operating instructions should be read before the unit is operated.

## 2. RETAIN INSTRUCTIONS

The safety and operating instructions should be retained for future reference.

## 3. HEED WARNINGS

All warnings on the unit and in the operating instructions should be adhered to.

## 4. FOLLOW INSTRUCTIONS

All operating and use instructions should be followed.

## 5. CLEANING

Unplug this unit from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

## 6. ATTACHMENTS

Do not use attachments not recommended by the unit's manufacturer as they may cause hazards.

## 7. WATER AND MOISTURE

Do not use this unit near water. For example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool.

## 8. ACCESSORIES

Do not place this unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing serious injury, and serious damage to the unit. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer.

- 8A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

## 9. VENTILATION

Slots and openings in the cabinet and in the back or bottom are provided for ventilation, to ensure reliable operation of the unit, and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the unit on a bed, sofa, rug, or other similar surface. This unit should never be placed near or over a radiator or heat source. This unit should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

## 10. POWER SOURCES

This unit should be operated only from the type of power source indicated on the rating plate. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company. For units intended to operate from battery power, or other sources, refer to the operating instructions.

## 11. GROUNDING OR POLARIZATION

This unit is equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug. If your unit is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin, this plug will only fit into a grounding-type power outlet. This too, is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.

## 12. POWER-CORD PROTECTION

Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

## 13. LIGHTNING

To protect your unit from a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the unit due to lightning and power line surges.

## 14. POWER LINES

An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits, as contact with them might be fatal.

## 15. OVERLOADING

Do not overload wall outlets and extension cords, as this can result in a risk of fire or electric shock.

## 16. OBJECT AND LIQUID ENTRY

Do not push objects through any openings in this unit, as they may touch dangerous voltage points or short out parts that could result in fire or electric shock. Never spill or spray any type of liquid into the unit.

PORTABLE CART WARNING  
(symbol provided by RETAC)



S3125A

## 17. OUTDOOR ANTENNA GROUNDING

If an outside antenna or cable system is connected to the unit, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA 70, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

## 18. SERVICING

Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

## 19. DAMAGE REQUIRING SERVICE

Unplug this unit from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- a. When the power-supply cord or plug is damaged.
- b. If liquid has been spilled, or objects have fallen into the unit.
- c. If the unit has been exposed to rain or water.
- d. If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to its normal operation.
- e. If the unit has been dropped or the cabinet has been damaged.
- f. When the unit exhibits a distinct change in performance, this indicates a need for service.

## 20. REPLACEMENT PARTS

When replacement parts are required, be sure the service technician uses replacement parts specified by the manufacturer or those that have the same characteristics as the original parts.

Unauthorized substitutions may result in fire, electric shock or other hazards.

## 21. SAFETY CHECK

Upon completion of any service or repairs to this unit, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.

## 22. WALL OR CEILING MOUNTING

The product should be mounted to a wall or ceiling only as recommended by the manufacturer.

## 23. HEAT

The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

## 24. DISC TRAY

Keep your fingers well clear of the disc tray as it is closing. It may cause serious personal injury.

## 25. CONNECTING

When you connect the product to other equipment, turn off the power and unplug all of the equipment from the wall outlet. Failure to do so may cause an electric shock and serious personal injury. Read the owner's manual of the other equipment carefully and follow the instructions when making any connections.

## 26. SOUND VOLUME

Reduce the volume to the minimum level before you turn on the product. Otherwise, sudden high volume sound may cause hearing or speaker damage.

## 27. SOUND DISTORTION

Do not allow the product output distorted sound for a longtime. It may cause speaker overheating and fire.

## 28. HEADPHONES

When you use the headphones, keep the volume at a moderate level. If you use the headphones continuously with high volume sound, it may cause hearing damage.

## 29. LASER BEAM

Do not look into the opening of the disc tray or ventilation opening of the product to see the source of the laser beam. It may cause sight damage.

## 30. DISC

Do not use a cracked, deformed, or repaired disc. These discs are easily broken and may cause serious personal injury and product malfunction.

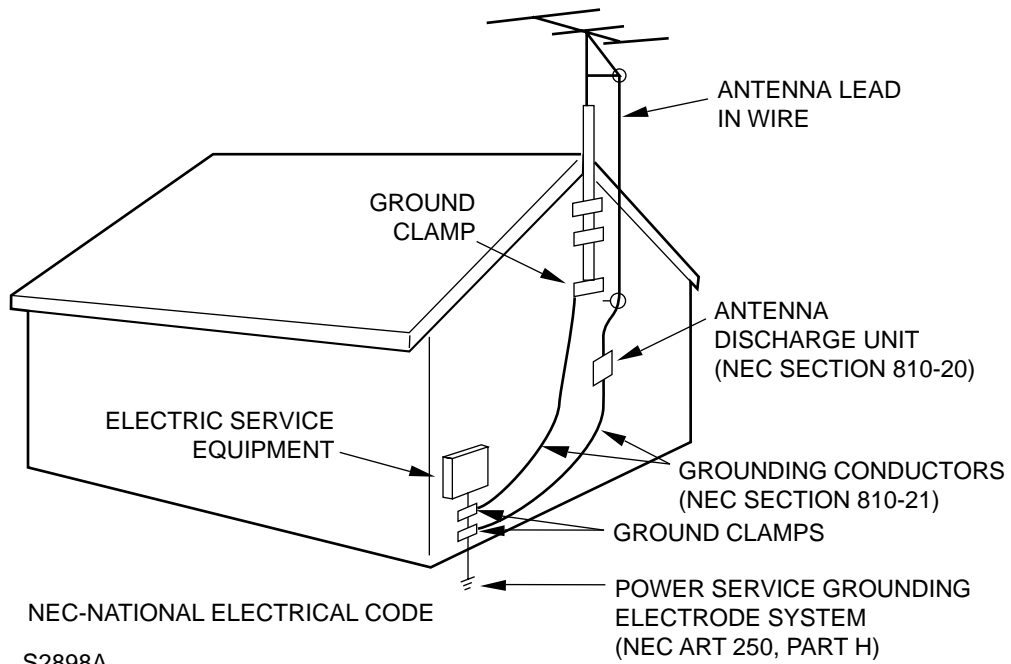
## 31. NOTE TO CATV SYSTEM INSTALLER

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

# IMPORTANT SAFEGUARDS

(CONTINUED)

EXAMPLE OF ANTENNA GROUNDING AS PER THE NATIONAL ELECTRICAL CODE



## TAPE REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the TV/DVD/VCR block from the main unit and the Fig. 1 below can be seen.  
(Refer to item 1 of the DISASSEMBLY INSTRUCTIONS.)
2. Remove the screw ① of the Deck Chassis and remove the Loading Motor.
3. Rotate the Pinch Roller Cam in the direction of the arrow by hand to slacken the Video Tape.  
(Refer to Fig. 2)
4. Rotate the Clutch Ass'y either of the directions to wind the Video Tape in the Cassette Case.
5. Repeat the above step 3~4. Then take out the Video Cassette from the Deck Chassis. Be careful not to scratch on the tape.

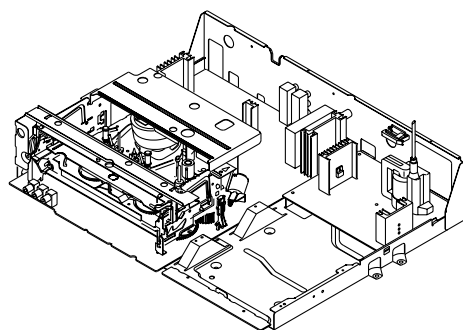


Fig. 1

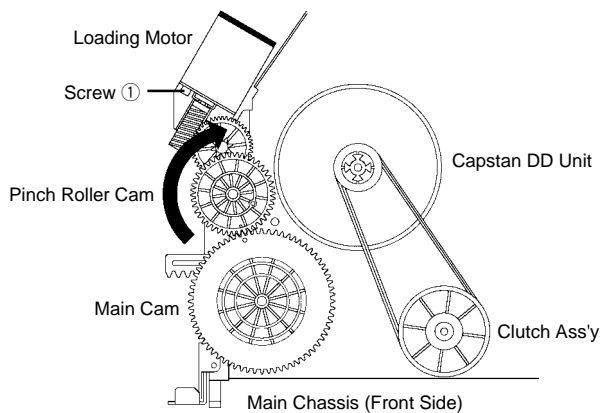


Fig. 2

## DISC REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the Back Cabinet, TV//DVD/VCR Block and DVD TOP. (Refer to item 1 of the DISASSEMBLY INSTRUCTIONS.)
2. Slide the Rack Loading (White) toward the arrow direction by using a minus driver to release the lock.  
(Refer to Fig. 1)
3. Draw the Tray.

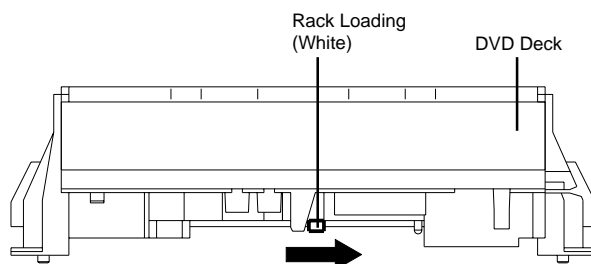


Fig. 1

## PARENTAL CONTROL - RATING LEVEL 4 DIGIT PASSWORD CANCELLATION

If the stored 4 digit password in the Rating Level menu needs to be cancelled, please follow the steps below.

1. Turn Unit ON.
2. Set the DVD to the Stop Mode.
3. Check that the 'No disk' is displayed on the screen.
4. Press and hold the 'STOP(DVD)' button on the front panel.
5. Simultaneously press and hold the '2' key on the remote control unit.
6. Hold both keys for more than 2 second.
7. The On Screen Display message 'PASSWORD CLEAR' will appear.
8. The 4 digit password has now been cleared.

## TRAY LOCK

Tray cannot be opened by setting the Tray Lock, please follow the steps below.

1. Turn Unit ON.
2. Set the DVD to the Stop Mode.
3. Press and hold the 'STOP(DVD)' key on the front panel.
4. Simultaneously press and hold the '9' key on the remote control unit.
5. Hold both keys for more than 3 seconds.
6. Press the OPEN/CLOSE key on the front panel to check the Tray Lock setting.

**NB:** No indications on the screen when the Tray Lock is setting.

To unlock the Tray Lock, please follow the steps below.

1. Turn Unit ON.
2. Set the DVD to the Stop Mode.
3. Set the VOLUME to minimum.
4. Press and hold the 'REC/OTR' button on the front panel.
5. Simultaneously press and hold the '4' key on the remote control unit.
6. Hold both keys for more than 2 second.
7. The On Screen Display message 'INITIALIZE5 COMPLETE' will appear.
8. The Tray Lock has now been cleared.

**NB:** The above procedure will reset ALL of the player's settings to the default factory state.



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# GENERAL SPECIFICATIONS

G-1	TV System	CRT	CRT Size / Visual Size	20 inch / 508.0mmV
			CRT Type	Flat
			Deflection	90 degree
			Magnetic Field BV/BH	+ 0.45 G / 0.18 G
		Color System		NTSC
		Speaker		2 Speaker
			Position	Front
			Size	1.8 x 3.9 Inch
			Impedance	8 ohm
		Sound Output	MAX 10%(Typical)	1.5W + 1.5W 1.5W + 1.5W
G-2	VCR System	System		VHS Player / Recorder
		Video System		NTSC
		Hi-Fi STEREO		Yes
		NTSC PB		-
		Deck	DECK Loading System Motor	OVD-7 Front 3
		Heads	Video Head	4 Heads
			FM Audio Head	2 Heads
			Audio /Control	Mono /Yes
			Erase(Full Track Erase)	Yes
		Tape Speed	Rec PAL NTSC	- SP/SLP(EP)
			Play PAL NTSC	- SP/SLP(EP)
		Fast Forward / Rewind Time (Approx.) at 25oC		FF:1'48"/REW:1'48" T-120
		Forward/Reverse	NTSC or PAL-M	SP/SLP(EP)=3x,5x / 9x,15x
		Picture Search		
		Frame Advance		Yes
		Slow Speed		1/10
G-3	DVD System	Color System		NTSC
		Disc		DVD, CD-DA, CD-R/RW, Video CD
		Disc Diameter		120 mm , 80 mm
		Deck	Disc Loading System Motor	Front Loading 2 Motors
		Pick up		1-Lens 2-Beams System
		Playback time(Max)	DVD 1-Layer DVD 2-Layer CD Video CD	135min (4.7GB) 245min (8.5GB) 74min 74min
		Search speed	Fwd	2-20 times / 4 step 2-45 times (DVD, VIDEO CD) 4-40 times (CD)
			Rev	2-20 times / 4 step 2-45 times (DVD, VIDEO CD) 4-40 times (CD)
		Slow speed		Fwd 1/7 - 1/2 times --
				Rev --
				--
G-4	Tuning System	Broadcasting System		US System M
		Tuner and	System	1 Tuner
		Receive CH	Destination	US(w/CATV)
			Tuning System	F-Synth
			Input Impedance	VHF/UHF 75 ohm
			CH Coverage	2~69, 4A,A-5~A-1, A~I, J~W,W+1~W+84
		Intermediate Frequency	Picture(FP) Sound(FS) FP-FS	45.75MHz 41.25MHz 4.5MHz
		Preset CH		No
		Stereo/Dual TV Sound		US-Stereo
		Tuner Sound Muting		Yes

## GENERAL SPECIFICATIONS

G-5	Signal	Video Signal	Input Level	1 V p-p/75 ohm
			Output Level	1 V p-p/75 ohm
			S/N Ratio (Weighted) at DVD Mode	65dB
			S/N Ratio (Weighted) at VCR Mode	50dB
			Horizontal Resolution at DVD Mode	400 Lines
			Horizontal Resolution at VCR(SP)Mode	220 Lines
		RGB Signal	Output Level	-
		Audio Signal	Input Level	-8.0dBm/50k ohm
			Output Level(0dB=0.775Vrms)	-8.0dBm/1k ohm
			Output Level(-20dBFs 0dBFs=2.0Vrms)	-12.0dBm/1k ohm
			Digital Output Level	0.5 V p-p/75 ohm(DVD)
			S/N Ratio at DVD (Weighted)	90 dB
			S/N Ratio at VCR (SP)(CCIR Filter:ON)	38 dB
			Harmonic Distortion at DVD Mode	0.06% (1kHz)
			Harmonic Distortion at VCR(SP) Mode	1.5% (1kHz) Typical
			Frequency Response :	
			DVD Mode	
			at DVD	4Hz - 22kHz
			at Video CD	4Hz - 20kHz
			at SVCD	-
			at CD	4Hz - 20kHz
			VCR Mode	
			at SP	100Hz - 10kHz
			at LP	-
			at SLP	100Hz - 4kHz
		Hi-Fi Audio Signal	Dynamic Range : More than	90 dB
			Frequency Response :	20Hz - 20kHz
			Wow And Flutter : Less than	0.01 %Wrms
			Channel Separation : More than	60 dB
			Harmonic Distortion : Less than	1.0 %
G-6	Power	Power Source	AC	120V,60Hz
			DC	-
		Power Consumption		
			at AC	110 W at 120 V 60 Hz
			at DC	-
			Stand by (at AC) Per Year	4 W at 120 V 60 Hz -
		Protector	Power Fuse Safety Circuit IC Protector(Micro Fuse) Dew Sensor	Yes Yes No No
G-7	Regulation		Safety	UL
			Radiation	FCC
			X-Radiation	DHHS
			Laser	DHHS
G-8	Temperature		Operation	+5oC ~ +40oC
			Storage	-20oC ~ +60oC
G-9	Operating Humidity			Less than 80% RH

## GENERAL SPECIFICATIONS

G-10	On Screen Display (TV/VCR)	Menu	Yes
		Menu Type	Icon
		System Setup	Yes
		Clock Set	Yes
		On/Off Timer Set	Yes
		Auto Clock On/Off	Yes
		Standard Time	Yes
		Daylight Saving Time	Yes
		TV Setup	Yes
		Language	Yes
		Picture	Yes
		Audio	Yes
		Picture Preference	Yes
		Channel Setup	Yes
		TV/CATV	Yes
		Auto CH Memory	Yes
		Add/ Delete	Yes
		V-chip Setup	Yes
		Tape Setup	Yes
		Timer Rec Set	Yes
		Auto Repeat On/Off	Yes
		G-CODE(or SHOWVIEW or PLUSCODE)No. Entry	No
		Clock / Date	Yes
		TV/VCR	Yes
		DVD	Yes
		CH/AV(LINE)	Yes
		Tape Counter(Linear Counter)	Yes
		Tape Speed	Yes
		Sleep Time	Yes
		Stereo/Audio Output	Yes
		Bilingual	No
		SAP	Yes
		Control Volume	Yes
		Level Brightness/Contrast/Sharpness/Color	Yes
		Tint	Yes
		Bass/Treble/Balance	Yes
		Manual Tracking	Yes
		Play/Stop/FF/Rew/Rec/OTR/T-Rec/Pause/Eject/Tape In (Symbol Mark)	Yes
		Auto Tracking/Manual Tracking	Yes
		Caption / Text	Yes
		Index	No
		Mute	Yes
		Hi-Fi	Yes
		Repeat	Yes
		Zero Return	Yes
		DEW	No

# GENERAL SPECIFICATIONS

G-11	On Screen Display (DVD)	Menu (DVD)		Yes
		Menu Type		Character
		Language		Yes
		Menu		Yes
		Subtitle		Yes
		Audio		Yes
		Picture		Yes
		TV Screen Size		Yes
		OSD Display On/Off		Yes
		JPEG Interval		Yes
		Select Files		Yes
		Sound		Yes
		DRC (Dynamic Range Control)		Yes
		dts Decode		No
		Output(5.1ch/ 2ch)		No
		Surround On/Off		No
		Center On/Off		No
		Sub Woofer On/Off		No
		Parental		Yes
		Password Lock/ Un Lock		Yes
		Rating Level		Yes
		Other		Yes
		OSD Language(Set up Language)		Yes
		Output(RGB/Composite)		No
		Open		Yes
		Close		Yes
		No disc		Yes
		Reading		Yes
		Play		Yes
		Still/Pause		Yes
		Stop		Yes
		Prohibit Mark		Yes
		Step		Yes
		Skip(>> )		Yes
		Skip( <<)		Yes
		Random		Yes (CD, VIDEO CD, MP3, WMA, JPEG )
		Repeat		Yes
		Slow+ ##		Yes
		Slow- ##		No
		Search+ ##		Yes
		Search- ##		Yes
		Jump		Yes
		Resume		Yes
		Title No.		Yes
		Chapter No.		Yes
		Track No.		Yes
		Time		Yes
		Sub Title No.		Yes
		Angle No.		Yes
		Vocal On/Off		Yes
		Audio No.		Yes
		Audio Stereo L/R		Yes (Video CD)
		Zoom		Yes
		Marker No.		No
		Program Play Back		Yes (CD, VIDEO CD, MP3, WMA, JPEG )
		Surround On/Off		No
		Screen Saver		No
		MP3, WMA, JPEG	Folder Name	Yes
			File Name	Yes
			File No	Yes
			Time	Yes (MP3, WMA Only)
			Track No	Yes
G-12	OSD Language	TV/VCR		English French Spanish
		DVD		English French Spanish

# GENERAL SPECIFICATIONS

G-13	Clock,Timer and Timer Back-up	Calendar	1990/1/1 ~ 2081/12/31	
		Timer Events	8 Program/ 1 Month	
		One Touch Recording Max Time	6 Hours	
		OTPB Valid Time	-	
		Sleep Timer	Max Time	120 Min
			Step	10 Min
		On/Off Timer	Program(On Timer / Off Timer)	
		Auto Shut Off	No Signal	15 Min
			No Operation	- Min
G-14	Remote Control Unit	Timer Back-up (at Power Off Mode)	5	Sec
		Unit(for TOSHIBA)	RC-FG	
		Glow in Dark Remocon	Yes	
		Format	NEC	
		Custom Code	40-BFh,44-BBh	
		Power Source	Voltage(D.C)	3V
			UM size x pcs	UM-4 x 2 pcs
		Total Keys	48	Key
		Keys	TV/VCR	
			Yes	
		DVD	Yes	
		Power	Yes	
		1	Yes	
		2	Yes	
		3	Yes	
		4	Yes	
		5	Yes	
		6	Yes	
		7	Yes	
		8	Yes	
		9	Yes	
		0	Yes	
		Channel-	Yes	
		Channel+	Yes	
		Volume-	Yes	
		Volume+	Yes	
		Display	Yes	
		Sleep	Yes	
		Audio Select	Yes	
		Mute	Yes	
		Channel Return / Skip-	Yes	
		Closed Caption / Skip+	Yes	
		T-REC	Yes	
		Rec(T-Rec/OTR)	Yes	
		Rec/OTR	Yes	
		Slow+	Yes	
		Play	Yes	
		Stop	Yes	
		Rew	Yes	
		F. Fwd	Yes	
		Pause / Still	Yes	
		CM Skip / Jump	Yes	
		SP/SLP / Return	Yes	
		Counter Reset / Angle	Yes	
		Zero Return / Subtitle	Yes	
		Input Select / Zoom	Yes	
		Menu /Set Up	Yes	
		Program / Repeat A-B	Yes	
		D.Tracking / Top Menu	Yes	
		Tracking+ / DVD Menu	Yes	
		Tracking- / Play Mode	Yes	
		Cancel/Clear	Yes	
		3D Surround	No	
		Cursor Up	Yes	
		Cursor Down	Yes	
		Cursor Left	Yes	
		Cursor Right	Yes	
		Enter	Yes	
		VCR Plus+	No	
		One More Search	No	
		Remain/Counter	No	
		Eject	No	
		Index-	No	
		Index+	No	

## GENERAL SPECIFICATIONS

G-15	Features	Auto Head Cleaning	Yes
		Auto Tracking	Yes
		HQ (VHS Standard High Quality)	Yes
		Auto Power On, Auto Play, Auto Rewind, Auto Eject	Yes
		VIDEO PLUS+(SHOWVIEW,G-CODE)	No
		Auto Clock	Yes
		Forward / Reverse Picture Search	Yes
		Auto CH Memory	Yes
		Surround	Yes
		Stable Sound	Yes
		Closed Caption	Yes
		TV Auto Shut off Function	Yes
		End Call	No
		Index Search	No
		SQPB	No
		CATV	Yes
		CM Skip(30sec x 6 Times)	Yes
		Comb Filter (2Lines)	Yes
		VM Circuit	No
		TV Monitor	No
		Program Extend	No
		Choke Coil	No
		Energy Star	Yes
		Protect of FBT Leak Circuit	Yes
		Zero Return	Yes
		Power On Memory	No
		Dirty Head	No
		V-chip USA V-chip	Yes
		CANADA V-chip	No
		Parental Lock (DVD Only)	Yes
		Tray Lock	Yes
		Auto Stop (Pause, and Resume Stop after 5min.)	Yes
		Video CD Playback	Yes
		SVCD Playback	No
		Overlay Graphics And Text	No
		Command List	No
		Entry Point Jump	No
		MP3 Playback	Yes
		WMA Playback	Yes
		JPEG Playback	Yes
		Digital Out (Dolby Digital)	Yes
		(MPEG)	Yes
		(PCM)	Yes
		(DTS)	Yes
		Down Mix Out (Dolby Digital)	Yes
		(DTS)	No
		TruSurround	No
		Screen Saver	No
		Picture Preference	Yes
		Auto Setup	Yes
		Audio DAC	192kHz / 24bit
		Copy (Disc to Tape)	Yes (by Conditioning)

## GENERAL SPECIFICATIONS

G-16	Accessories	Owner's Manual		Language	English
				w/Guarantee Card	Yes
		Remote Control Unit			Yes
		Battery			Yes
				UM size x pcs	UM-4 x 2 pcs
				OEM Brand	No
		Rod Antenna			No
				Poles	-
				Terminal	-
		Loop Antenna			No
				Terminal	-
		U/V Mixer			No
		300 ohm to 75 ohm Antenna Adapter			Yes
		Antenna Change Plug			No
		DC Car Cord (Center+)			No
		AC Plug Adapter			No
		AC Cord			No
		AV Cord (2Pin-1Pin)			No
		Guarantee Card			No
		Registration Card			Yes
		ESP Card			No
		Warning Sheet			No
		Dew/AHC Caution Sheet			No
		Quick Set-up Sheet			No
		Circuit Diagram			No
		Service Facility List			No
		Important Safeguard			No
		Sheet Information (Return)			Yes
G-17	Interface	Switch	Front	Power (Tact)	Yes
				Channel Up	Yes
				Channel Down	Yes
				Volume Up	Yes
				Volume Down	Yes
				Play (VCR)	Yes
				Stop / Eject (VCR)	Yes
				F.FWD/Cue (VCR)	Yes
				Rew/Rev (VCR)	Yes
				REC/OTR (VCR)	Yes
				Play (DVD)	Yes
				Stop (DVD)	Yes
				Skip+ /Search+ (DVD)	Yes
				Skip- /Search- (DVD)	Yes
				Open/Close (DVD)	Yes
				Input Select	No
				Main Power SW	No
		Indicator		Power	Yes(Red)
				REC/OTR	Yes(Red)
				T-REC	Yes(Red)
				TV/VCR	No
		Terminals	Front	DVD	No
				Video Input	RCA x 1
				Audio Input	RCA x 2(Stereo)
				Other Terminal	HeadPhone (Stereo & Mono, 3.5mm)
			Rear	Video Input	RCA x 1
				Audio Input	RCA x 2(Stereo)
				Video Output	RCA x1
				Audio Output	RCA x 2(Stereo)
				Digital Audio Output	Coaxial (DVD Only)
				VHF/UHF Antenna Input	F Type
				AC Inlet	No
G-18	Set Size	Approx. W x D x H (mm)		573 x 481 x 517	
G-19	Weight	Net (Approx.)		27.0kg (59.5lbs)	
		Gross (Approx.)		30.5kg (67.3lbs)	



## GENERAL SPECIFICATIONS

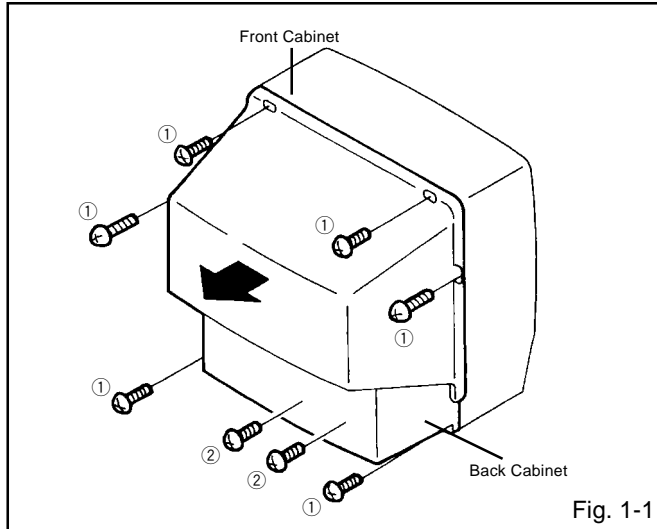
G-20	Carton	Master Carton	Content	No		
			Material	-		
			Dimensions     W x D x H(mm)	-		
			Description of Origin	-		
		Gift Box		Yes		
			Material	Double/White		
			Dimensions     W x D x H(mm)	658 x 575 x 625		
			Design	As per Buyer's		
		Drop Test	Natural Dropping At	Yes		
				1 Corner / 3 Edges / 6 Surfaces		
G-21	Material	Cabinet	Height (cm)	31		
			Container Stuffing(40' container)	216	Sets	
		PCB	Front	PS	94V0	DECABROM
			Rear	PS	94V0	DECABROM
			Jack Panel	-		
G-22	Environment	Pb Free	Non-Halogen Demand	No		
			Eyelet Demand	Yes		
		Cd Free	Lead-free Solder	No		
Other	No					
				No		

# DISASSEMBLY INSTRUCTIONS

## 1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

### 1-1: BACK CABINET (Refer to Fig. 1-1)

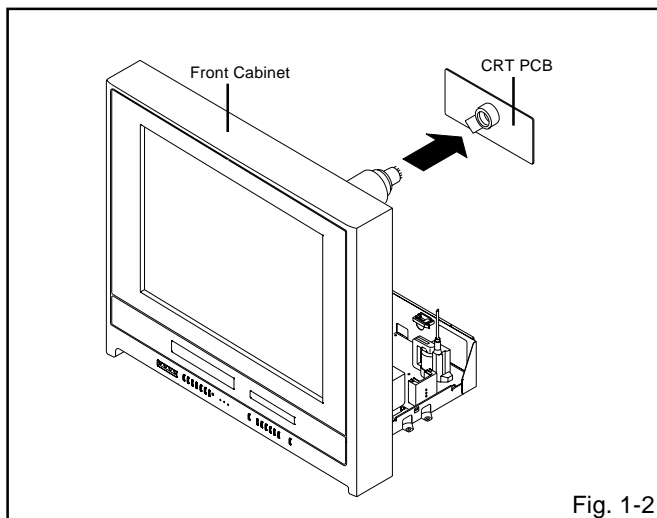
1. Remove the 6 screws ①.
2. Remove the 2 screws ②.
3. Remove the Back Cabinet in the direction of arrow.



### 1-2: CRT PCB (Refer to Fig. 1-2)

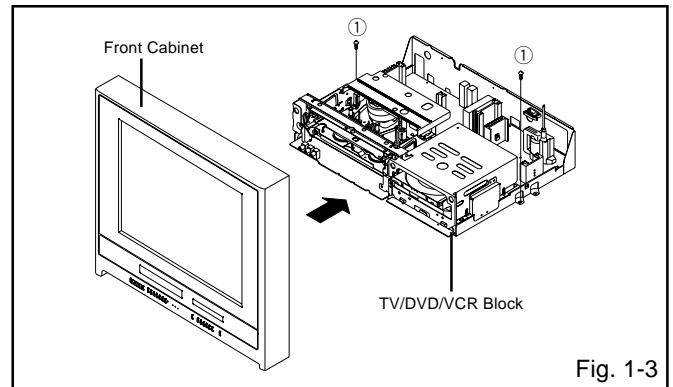
**CAUTION: BEFORE REMOVING THE ANODE CAP, DISCHARGE ELECTRICITY BECAUSE IT CONTAINS HIGH VOLTAGE. BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.**

1. Remove the Anode Cap.  
(Refer to REMOVAL OF ANODE CAP)
2. Disconnect the following connectors:  
(CP603B, CP803 and CP805).
3. Remove the CRT PCB in the direction of arrow.



### 1-3: TV/DVD/VCR BLOCK (Refer to Fig. 1-3)

1. Remove the 2 screws ①.
2. Disconnect the following connectors:  
(CP303, CP404 and CP1704).
3. Remove the TV/DVD/VCR Block in the direction of arrow.

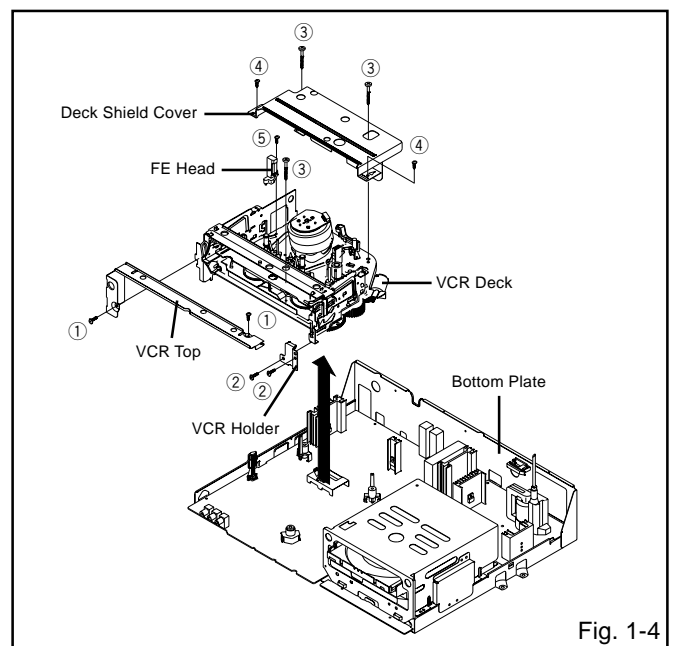


### 1-4: VCR DECK (Refer to Fig. 1-4)

#### NOTE

Do not remove the cable at the FE Head section. The FE Head may be damaged if you remove the cable by force.

1. Remove the 2 screws ①.
2. Remove the VCR Top.
3. Remove the 2 screws ②.
4. Remove the VCR Holder.
5. Move the Cassette Holder Ass'y to the back side.
6. Remove the 3 screws ③.
7. Remove the 2 screws ④.
8. Remove the Deck Shield Cover.
9. Remove the screw ⑤.
10. Remove the FE Head.
11. Disconnect the following connectors:  
(CP101, CP4501 and CP4502).
12. Remove the VCR Deck in the direction of arrow.



# DISASSEMBLY INSTRUCTIONS

## 1-5: VCR PCB (Refer to Fig. 1-5)

1. Remove the 6 screws ①.
2. Remove the screw ②.
3. Remove the AV Jack Shield.
4. Disconnect the following connectors:  
(CP001, CP602B, CP604, CP2201, CP8001 and CP8002).
5. Remove the VCR PCB in the direction of arrow.

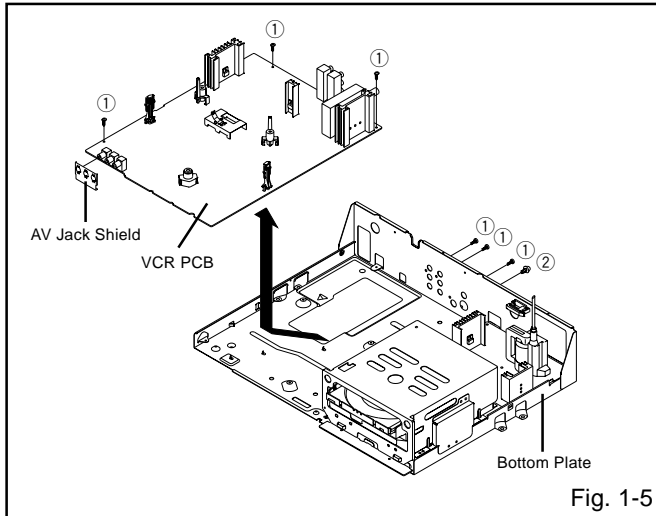


Fig. 1-5

## 1-6: VCR DECK (Refer to Fig. 1-6)

1. Remove the 2 screws ①.
2. Remove the DVD Shield.
3. Remove the 4 screws ②.
4. Remove the DVD Block in the direction of arrow (A).
5. Remove the 2 screws ③.
6. Remove the Operation PCB in the direction of arrow (B).

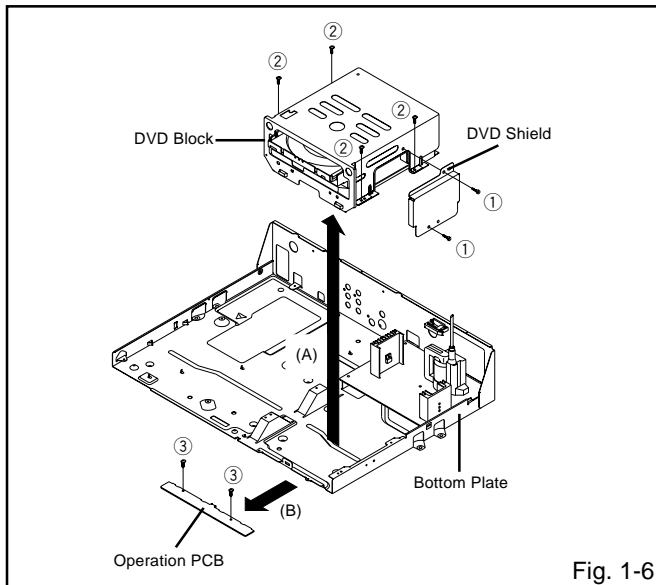


Fig. 1-6

## 1-7: DVD PCB/DVD DECK (Refer to Fig. 1-7)

1. Make the short circuit on the position as shown Fig. 1-7 using a soldering. If you remove the DVD Deck with no soldering, the Laser may be damaged.
2. Remove the 3 screws ①.
3. Remove the DVD Top in the direction of arrow (A).
4. Disconnect the following connectors:  
(CP2601, CP2602 and CP2603).
5. Remove the 4 screws ②.
6. Remove the DVD Deck in the direction of arrow (B).
7. Remove the 4 screws ③.
8. Remove the DVD PCB in the direction of arrow (C).

### NOTE

When the installation of the DVD Deck, remove all the soldering on the short circuit position after the connection of Pick Up PCB and DVD PCB connector.

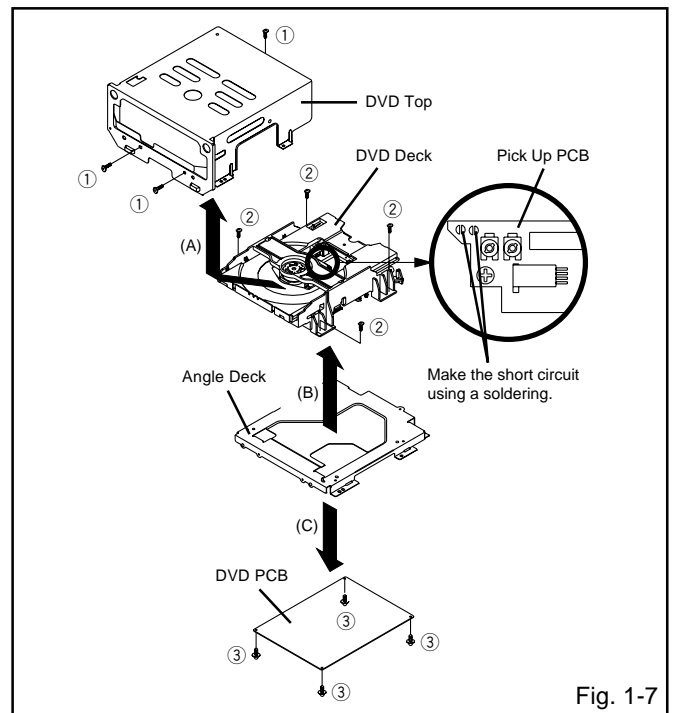


Fig. 1-7

## 1-8: DEFLECTION PCB (Refer to Fig. 1-8)

1. Remove the 2 screws ①.
2. Remove the 3 screws ②.
3. Remove the Deflection PCB in the direction of arrow.

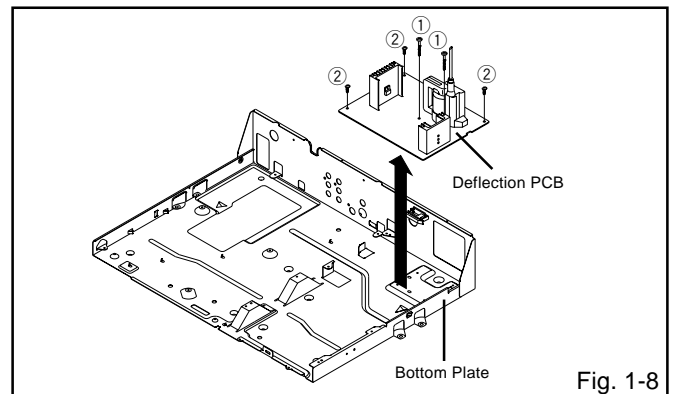


Fig. 1-8

# DISASSEMBLY INSTRUCTIONS

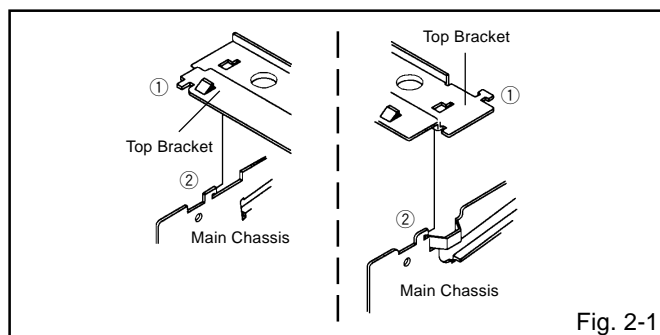
## 2. REMOVAL OF VCR DECK PARTS

### 2-1: TOP BRACKET (Refer to Fig. 2-1)

1. Extend the 2 supports ①.
2. Slide the 2 supports ② and remove the Top Bracket.

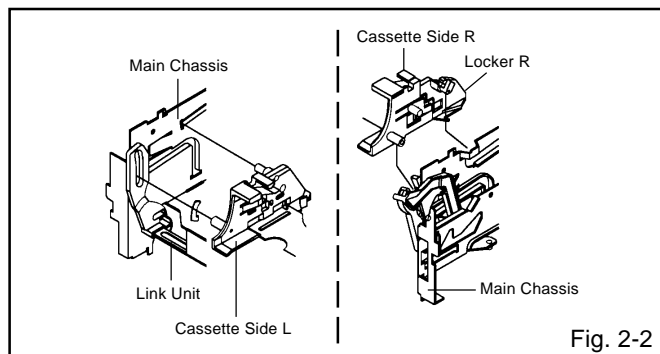
#### NOTE

1. After the installation of the Top Bracket, bend the support ① so that the Top Bracket is fixed.



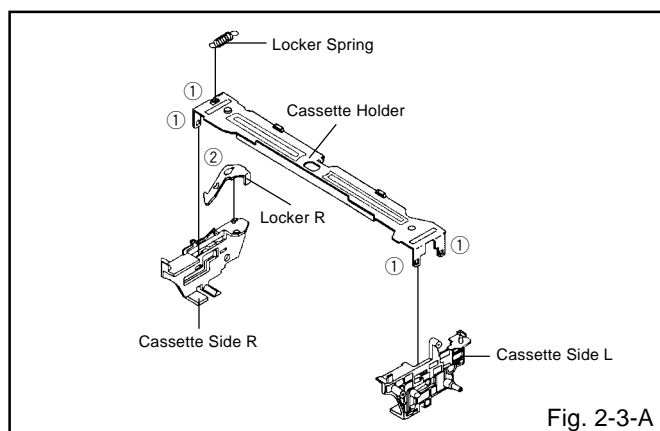
### 2-2: CASSETTE HOLDER ASS'Y (Refer to Fig. 2-2)

1. Move the Cassette Holder Ass'y to the front side.
2. Push the Locker R to remove the Cassette Side R.
3. Remove the Cassette Side L.



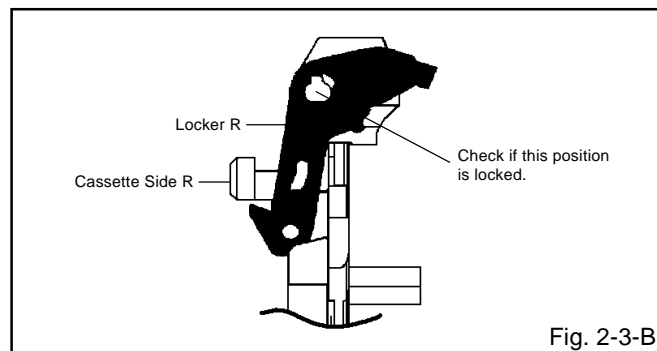
### 2-3: CASSETTE SIDE L/R (Refer to Fig. 2-3-A)

1. Remove the Locker Spring.
2. Unlock the 4 supports ① and then remove the Cassette Side L/R.
3. Unlock the support ② and then remove the Locker R.



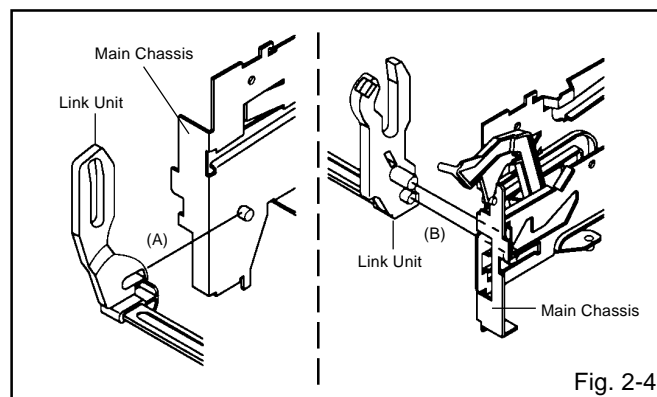
#### NOTE

1. In case of the Locker R installation, check if the one position of Fig. 2-3-B are correctly locked.
2. When you install the Cassette Side R, be sure to move the Locker R after installing.



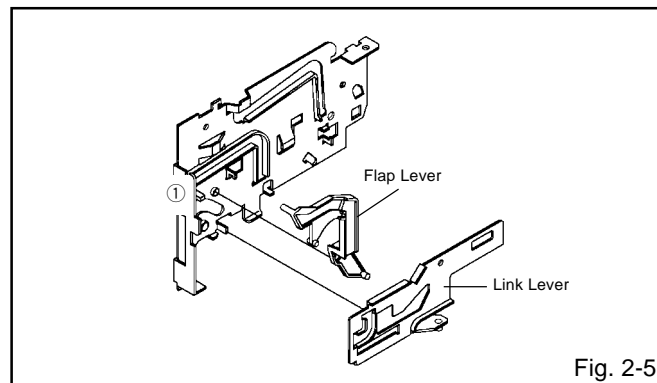
### 2-4: LINK UNIT (Refer to Fig. 2-4)

1. Set the Link Unit to the Eject position.
2. Unlock the support ①.
3. Remove the (A) side of the Link Unit first, then remove the (B) side.



### 2-5: LINK LEVER/FLAP LEVER (Refer to Fig. 2-5)

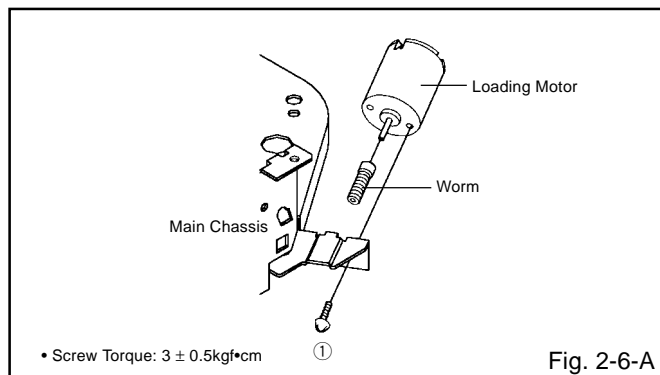
1. Extend the support ①.
2. Remove the Link Lever.
3. Remove the Flap Lever.



## DISASSEMBLY INSTRUCTIONS

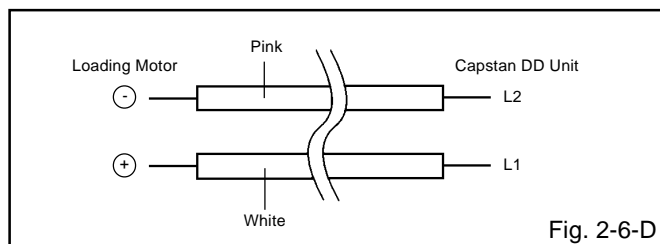
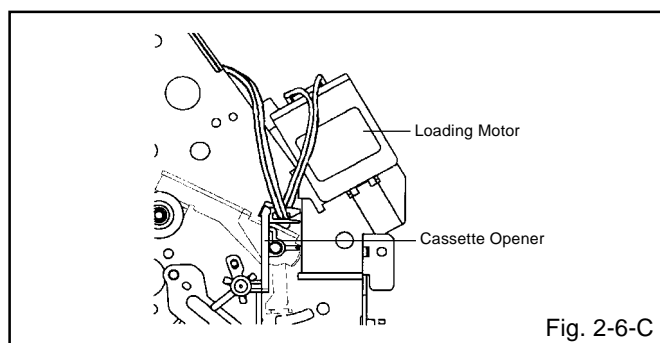
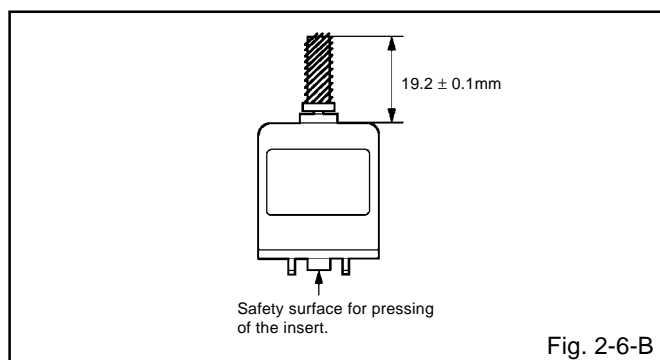
### 2-6: LOADING MOTOR/WORM (Refer to Fig. 2-6-A)

1. Remove the screw ①.
2. Remove the Loading Motor.
3. Remove the Worm.



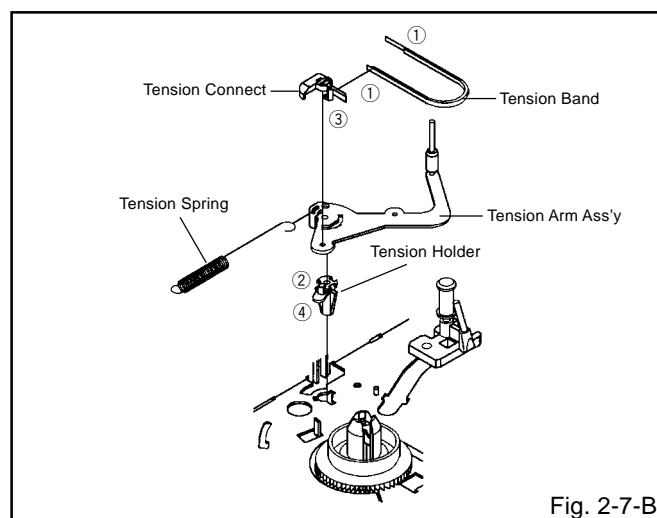
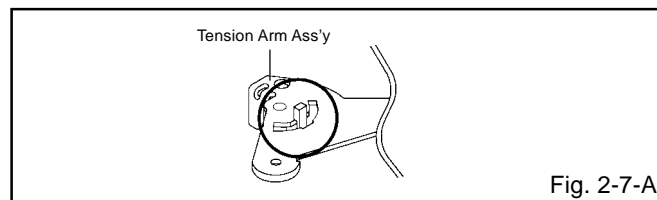
#### NOTE

1. In case of the Worm installation, check if the value of the Fig. 2-6-B is correct.
2. In case of the Loading Motor installation, hook the wire on the Cassette Opener as shown Fig. 2-6-C.
3. When installing the wires between Capstan DD Unit and Loading Motor, connect them correctly as shown Fig. 2-6-D.



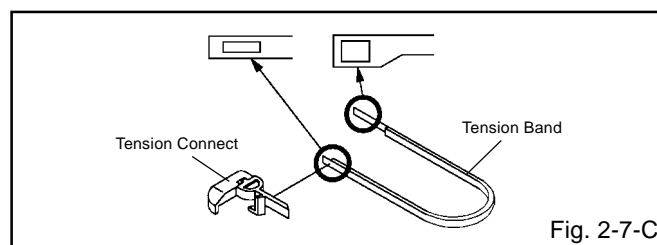
### 2-7: TENSION ASS'Y (Refer to Fig. 2-7-B)

1. Turn the Pinch Roller Cam clockwise so that the Tension Holder hook is set to the position of Fig. 2-7-A to move the Tension Arm Ass'y.
2. Remove the Tension Spring.
3. Unlock the 2 supports ① and remove the Tension Band.
4. Unlock the support ② and remove the Tension Arm Ass'y.
5. Unlock the support ③ and remove the Tension Connect.
6. Float the hook ④ and turn it clockwise then remove the Tension Holder.

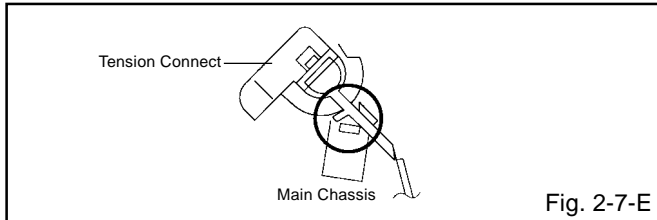
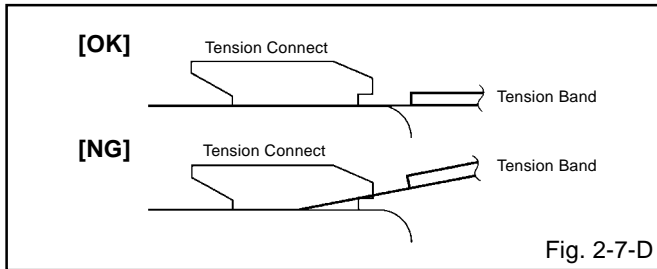


#### NOTE

1. In case of the Tension Band installation, note the direction of the installation. (Refer to Fig. 2-7-C)
2. In case of the Tension Band installation, install correctly as Fig. 2-7-D.
3. In case of the Tension Connect installation, install as the circled section of Fig. 2-7-E.

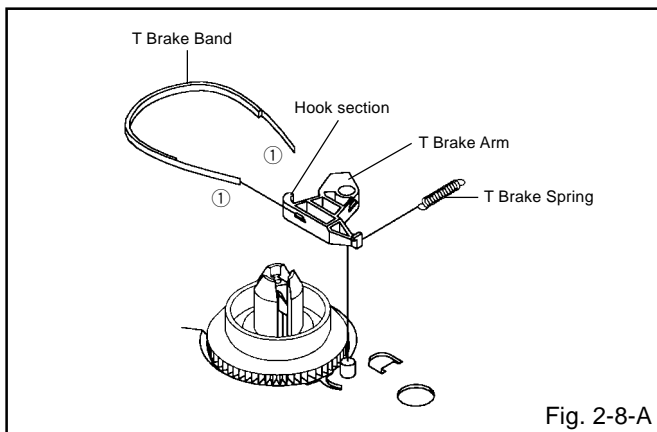


## DISASSEMBLY INSTRUCTIONS



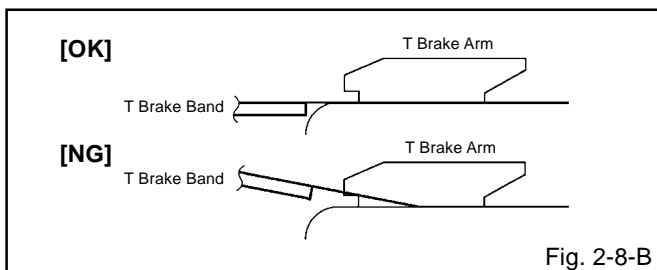
### 2-8: T BRAKE ARM/T BRAKE BAND (Refer to Fig. 2-8-A)

1. Remove the T Brake Spring.
2. Turn the T Brake Arm clockwise and bend the hook section to remove it.
3. Unlock the 2 supports ① and remove the T Brake Band.



#### NOTE

1. In case of the T Brake Band installation, install correctly as Fig. 2-8-B.

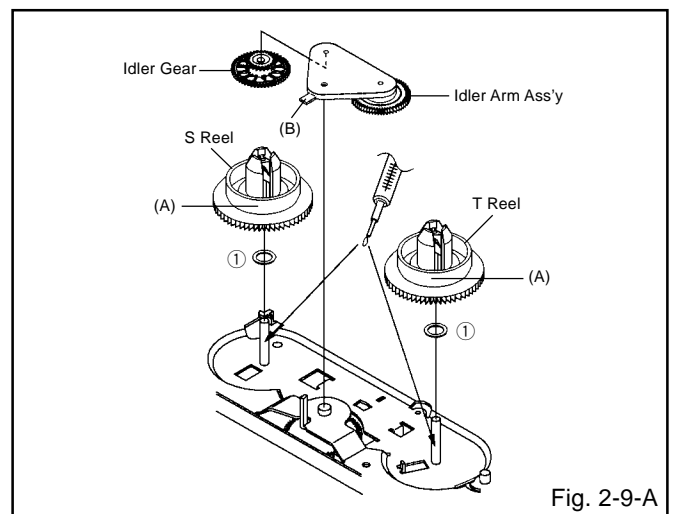


### 2-9: S REEL/T REEL/IDLER ARM ASS'Y/IDLER GEAR (Refer to Fig. 2-9-A)

1. Remove the S Reel and T Reel.
2. Remove the 2 Polyslider Washers ①.
3. Remove the Idler Arm Ass'y and Idler Gear.

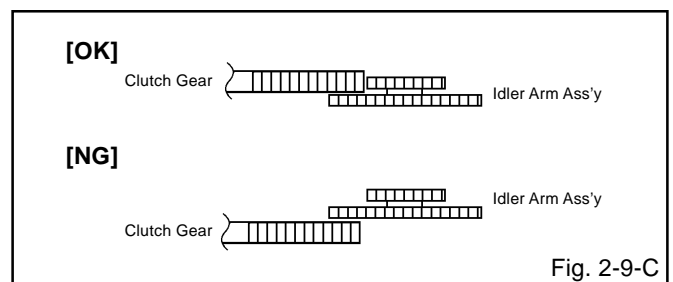
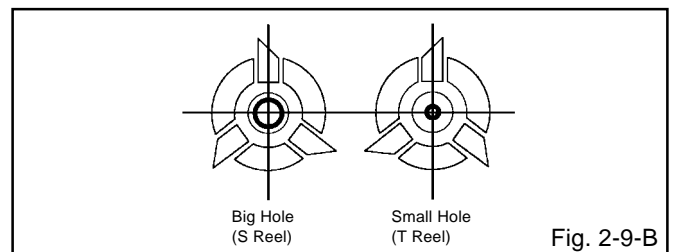
#### NOTE

1. Take care not to damage the gears of the S Reel and T Reel.
2. The Polyslider Washer may be remained on the back of the reel.
3. Take care not to damage the shaft.
4. Do not touch the section "A" of S Reel and T Reel. (Use gloves.) (Refer to Fig. 2-9-A) Do not adhere the stains on it.
5. When you install the reel, clean the shaft and grease it. (If you do not grease, noise may be heard in FF/REW mode.)
6. After installing the reel, adjust the height of the reel. (Refer to MECHANICAL ADJUSTMENT)



#### NOTE

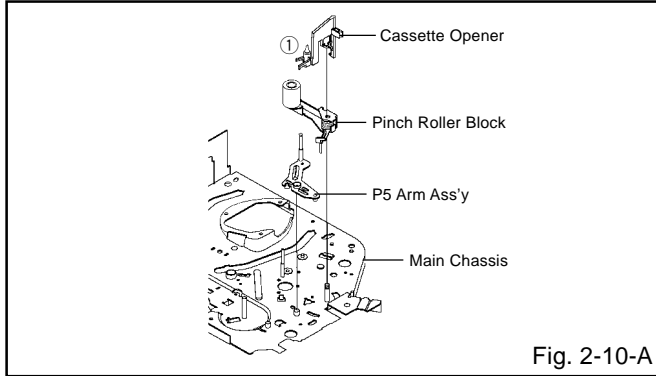
1. In case of the S Reel and T Reel installation, check if the correct parts are installed. (Refer to Fig. 2-9-B)
2. In case of the Idler Arm Ass'y installation, install correctly as Fig. 2-9-C. And also set it so that the section "B" of Fig. 2-9-A is placed under the Main Chassis tab.



## DISASSEMBLY INSTRUCTIONS

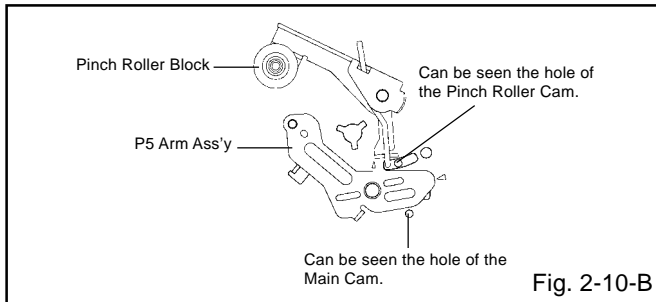
### 2-10: CASSETTE OPENER/PINCH ROLLER BLOCK/P5 ARM ASS'Y (Refer to Fig. 2-10-A)

1. Unlock the support ① and remove the Cassette Opener.
2. Remove the Pinch Roller Block and P5 Arm Ass'y.



#### NOTE

1. Do not touch the Pinch Roller. (Use gloves.)
2. In case of the Pinch Roller Block and the Pinch Roller Cam installation, install correctly as Fig. 2-10-B.

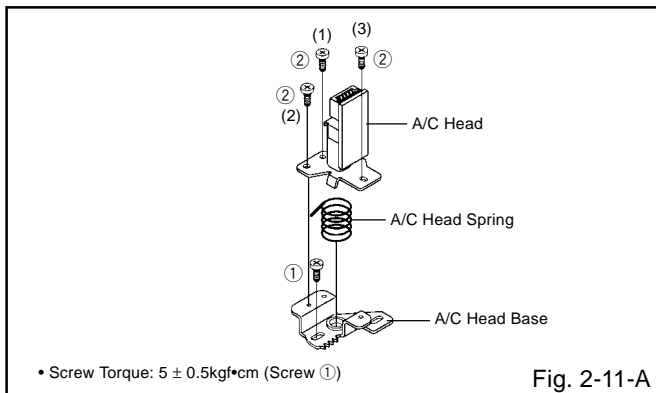


### 2-11: A/C HEAD (Refer to Fig. 2-11-A)

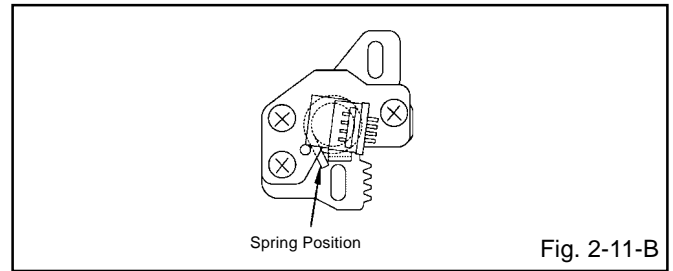
1. Remove the screw ①.
2. Remove the A/C Head Base.
3. Remove the 3 screws ②.
4. Remove the A/C Head and A/C Head Spring.

#### NOTE

1. Do not touch the A/C Head. (Use gloves.)
2. When you install the A/C Head Spring, install as shown in Fig. 2-11-B.
3. When you install the A/C Head, tighten the screw (1) first, then tighten the screw (2), finally tighten the screw (3).

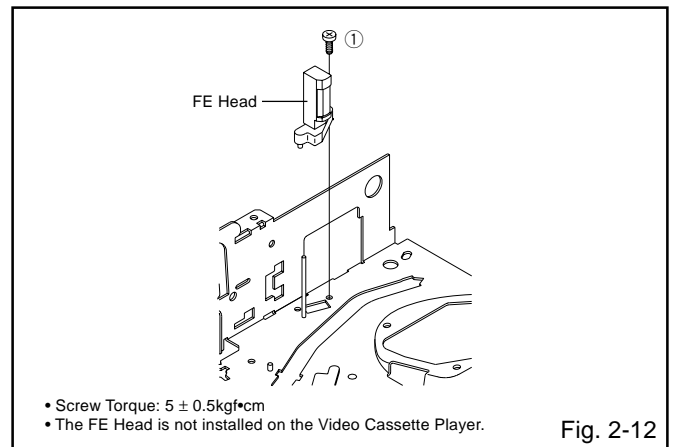


• Screw Torque:  $5 \pm 0.5 \text{ kgf} \cdot \text{cm}$  (Screw ①)



### 2-12: FE HEAD (RECORDER ONLY) (Refer to Fig. 2-12)

1. Remove the screw ①.
2. Remove the FE Head.



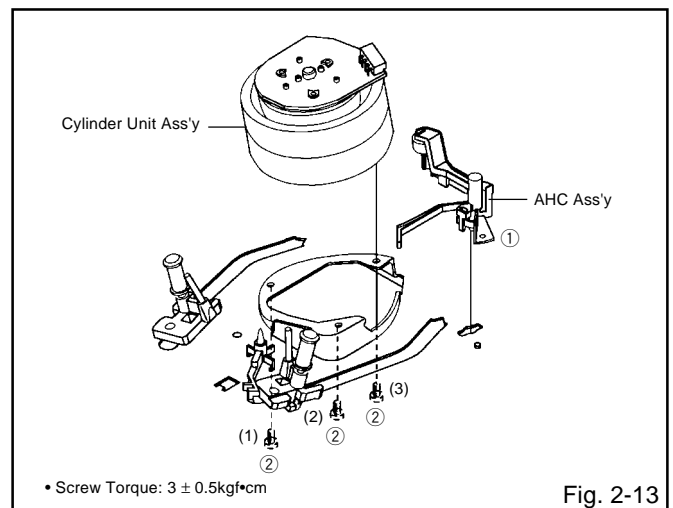
- Screw Torque:  $5 \pm 0.5 \text{ kgf} \cdot \text{cm}$
- The FE Head is not installed on the Video Cassette Player.

### 2-13: AHC ASS'Y/CYLINDER UNIT ASS'Y (Refer to Fig. 2-13)

1. Unlock the support ① and remove the AHC Ass'y.
2. Disconnect the following connector: (CD2001)
3. Remove the 3 screws ②.
4. Remove the Cylinder Unit Ass'y.

#### NOTE

1. When you install the Cylinder Unit Ass'y, tighten the screws from (1) to (3) in order while pulling the Ass'y toward the left front direction.

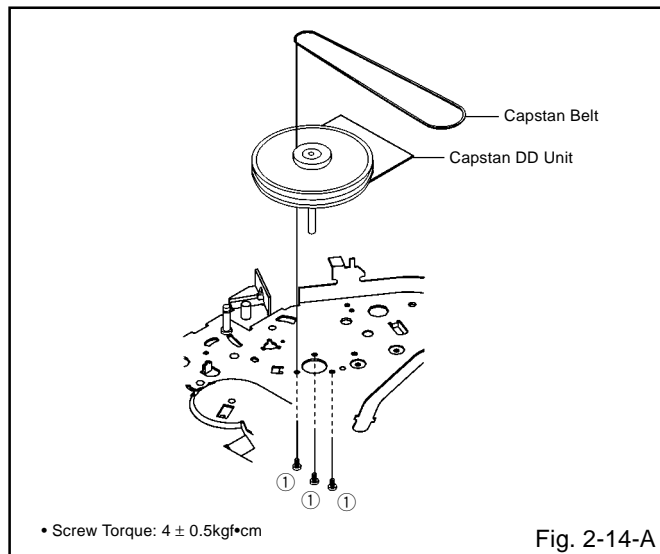


• Screw Torque:  $3 \pm 0.5 \text{ kgf} \cdot \text{cm}$

## DISASSEMBLY INSTRUCTIONS

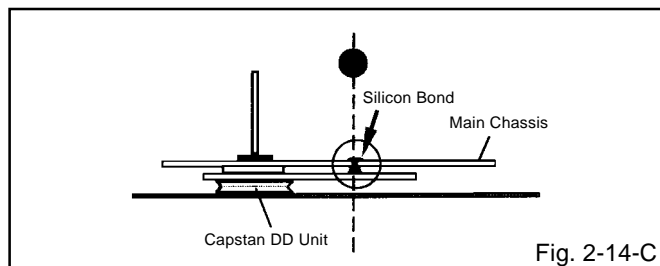
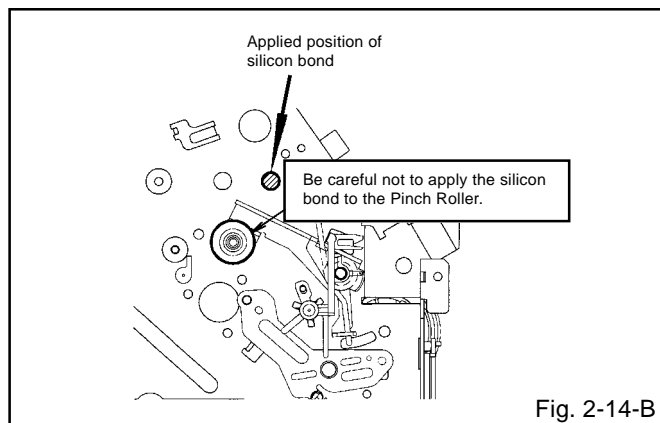
### 2-14: CAPSTAN DD UNIT (Refer to Fig. 2-14-A)

1. Remove the Capstan Belt.
2. Remove the 3 screws ①.
3. Remove the Capstan DD Unit.



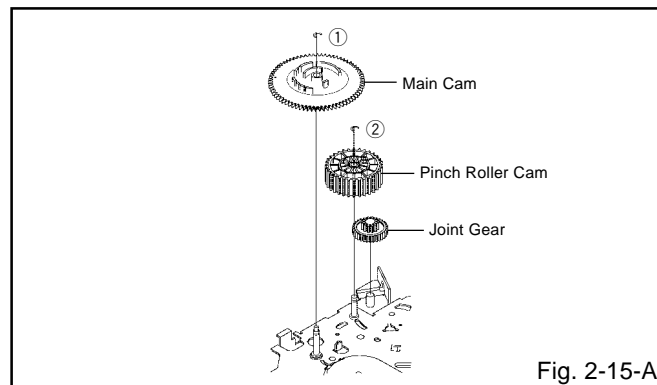
#### NOTE

1. In case of the Capstan DD Unit installation, apply the silicon bond (TSE3843-W) on the position Fig. 2-14-B correctly. (If no silicon bond applied, abnormal noise will be heard on the deck operation.)  
(Refer to Fig. 2-14-B, C)



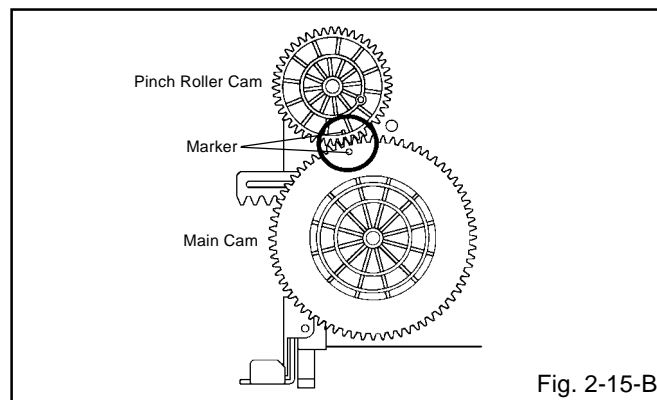
### 2-15: MAIN CAM/PINCH ROLLER CAM/JOINT GEAR (Refer to Fig. 2-15-A)

1. Remove the E-Ring ①, then remove the Main Cam.
2. Remove the E-Ring ②, then remove the Pinch Roller Cam and Joint Gear.



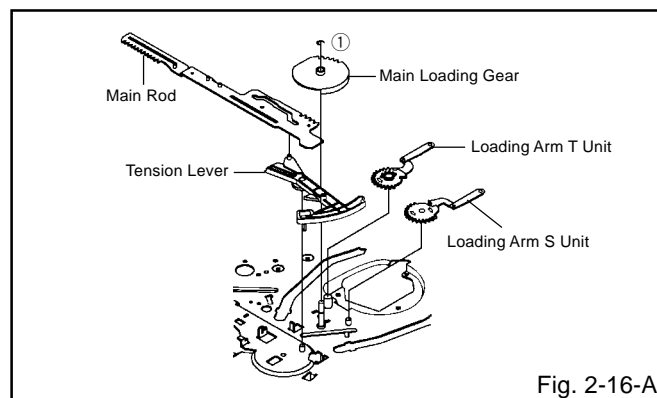
#### NOTE

1. In case of the Pinch Roller Cam and Main Cam installation, install them as the circled section of Fig. 2-15-B so that the each markers are met. (Refer to Fig. 2-15-B) And also can be seen the Main Chassis hole through the Main Cam maker hole.



### 2-16: LOADING GEAR S/T UNIT (Refer to Fig. 2-16-A)

1. Remove the E-Ring ① and remove the Main Loading Gear.
2. Remove the Main Rod, Tension Lever, Loading Arm S Unit and Loading Arm T Unit.

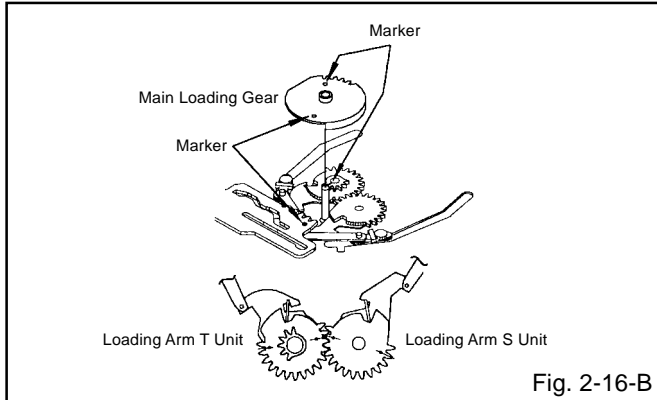




# DISASSEMBLY INSTRUCTIONS

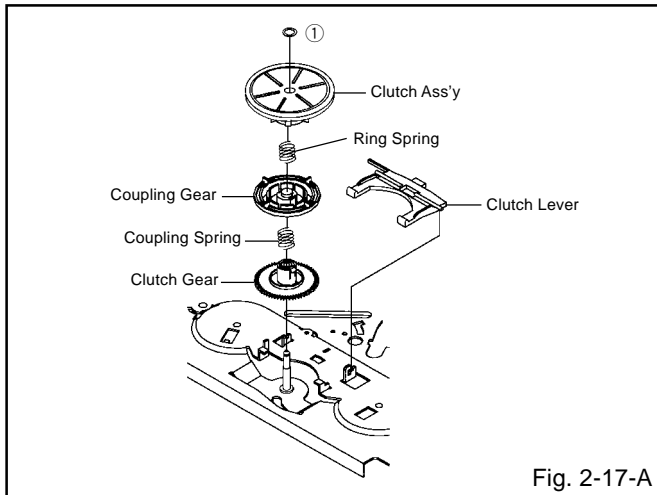
## NOTE

1. When you install the Loading Arm S Unit, Loading Arm T Unit and Main Loading Gear, align each marker. (Refer to Fig. 2-16-B)



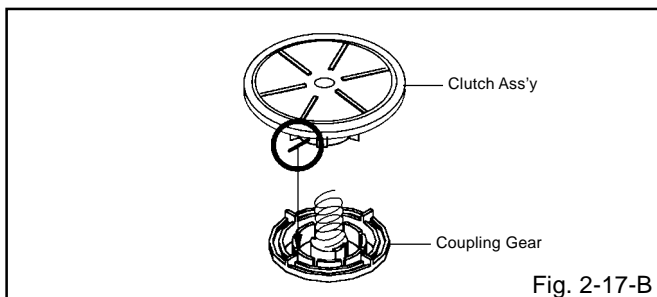
## 2-17: CLUTCH ASS'Y/RING SPRING/CLUTCH LEVER/CLUTCH GEAR (Refer to Fig. 2-17-A)

1. Remove the Polyslider Washer ①.
2. Remove the Clutch Ass'y and Ring Spring.
3. Remove the Clutch Lever.
4. Remove the Coupling Gear, Coupling Spring and Clutch Gear.



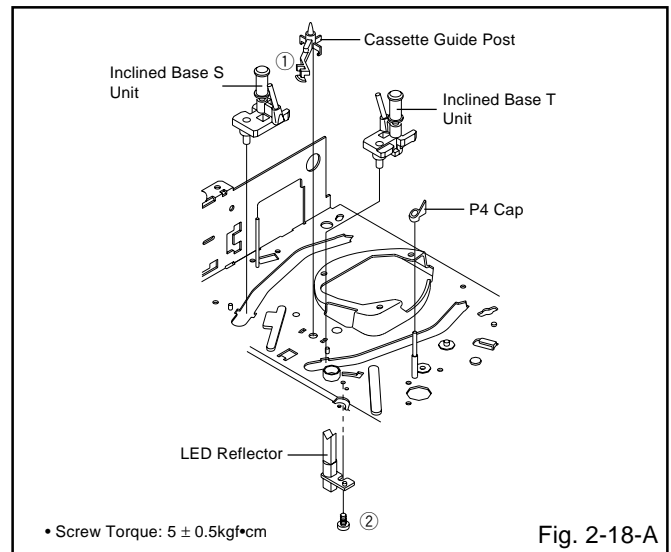
## NOTE

1. In case of the Clutch Ass'y installation, install it with inserting the spring of the Clutch Ass'y into the dent of the Coupling Gear. (Refer to Fig. 2-17-B)



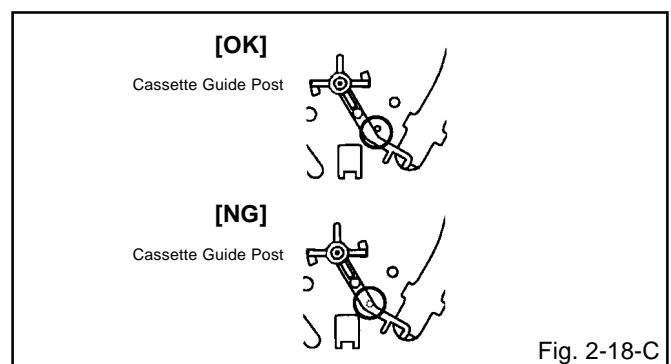
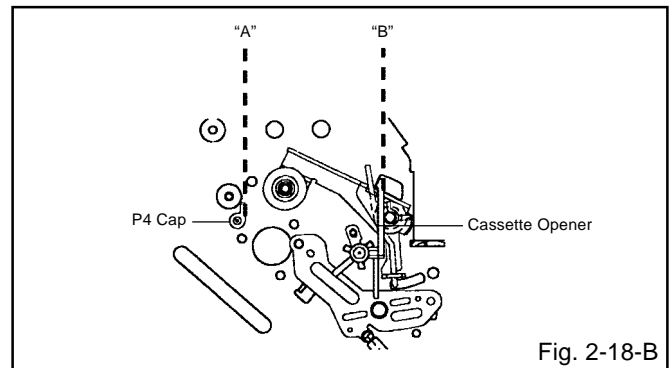
## 2-18: CASSETTE GUIDE POST/INCLINED BASE S/T UNIT/P4 CAP (Refer to Fig. 2-18-A)

1. Remove the P4 Cap.
2. Unlock the support ① and remove the Cassette Guide Post.
3. Remove the Inclined Base S/T Unit.
4. Remove the screw ②.
5. Remove the LED Reflector.



## NOTE

1. Do not touch the roller of Guide Roller.
2. In case of the P4 Cap installation, install it with parallel for "A" and "B" of Fig. 2-18-B.
3. In case of the Cassette Guide Post installation, install correctly as the circled section of Fig. 2-18-C.



# DISASSEMBLY INSTRUCTIONS

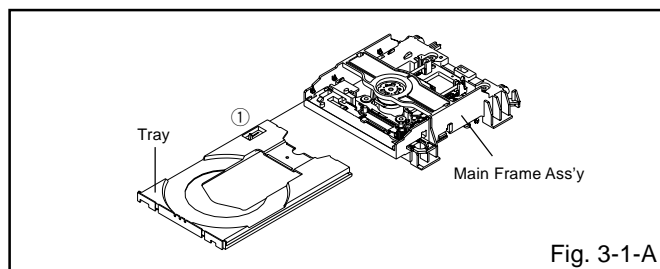
## 3. REMOVAL OF DVD DECK PARTS

### NOTE

1. Do not disassemble the DVD DECK PARTS except listed parts here. Minute adjustments are needed if the disassemble is done. If the repair is needed except listed parts, replace the DVD MECHA ASS'Y.

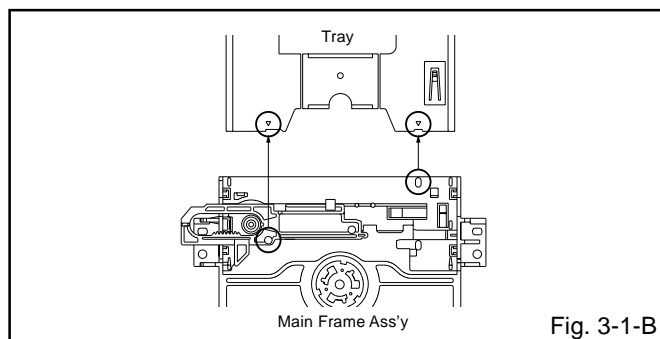
### 3-1: TRAY (Refer to Fig. 3-1-A)

1. Set the Tray opened. (Refer to the DISC REMOVAL METHOD AT NO POWER SUPPLY)
2. Unlock the support ① and remove the Tray.



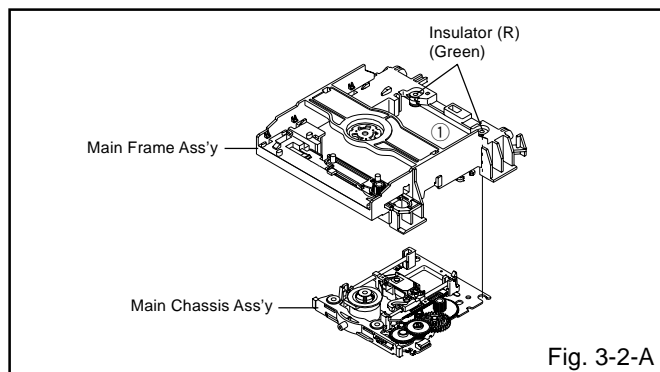
### NOTE

1. In case of the Tray installation, install them as the circled section of Fig. 3-1-B so that the each markers are met.



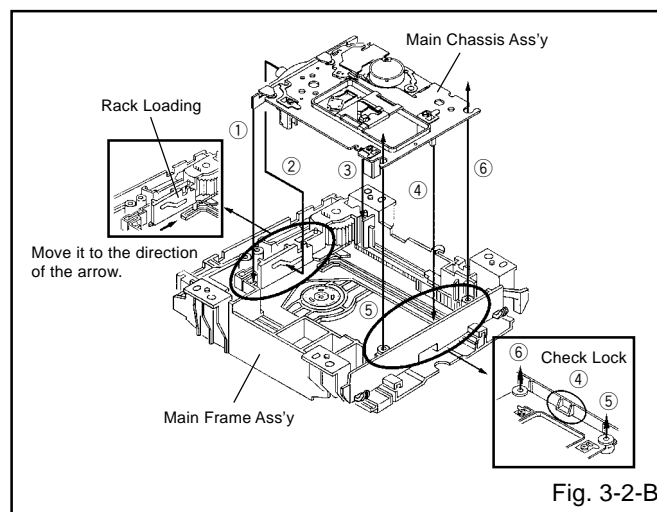
### 3-2: MAIN CHASSIS ASS'Y (Refer to Fig. 3-2-A)

1. Remove the Main Chassis Ass'y from the Insulator (R).
2. Unlock the support ①.
3. Remove the Main Chassis Ass'y.



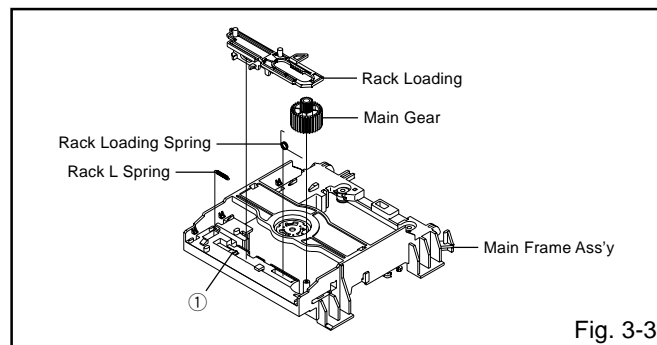
### NOTE

1. In case of the Main Chassis Ass'y, install it from (1) to (6) in order. (Refer to Fig. 3-2-B)



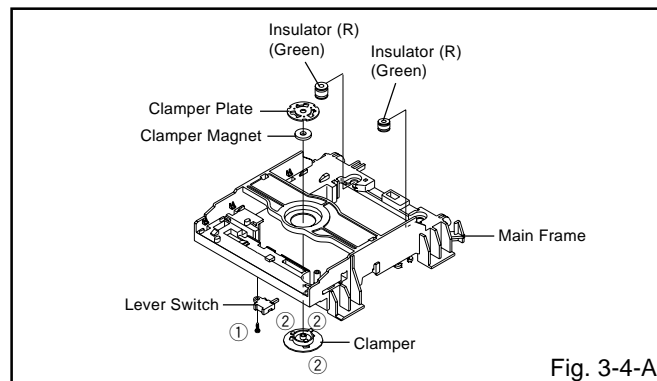
### 3-3: RACK LOADING/MAIN GEAR/ RACK LOADING SPRING/ RACK L SPRING (Refer to Fig. 3-3)

1. Remove the Rack L Spring.
2. Press down the catcher ① and slide the Rack Loading.
3. Remove the Rack Loading, Rack Loading Spring and Main Gear.



### 3-4: CLAMPER ASS'Y/INSULATOR(R)/LEVER SWITCH (Refer to Fig. 3-4-A)

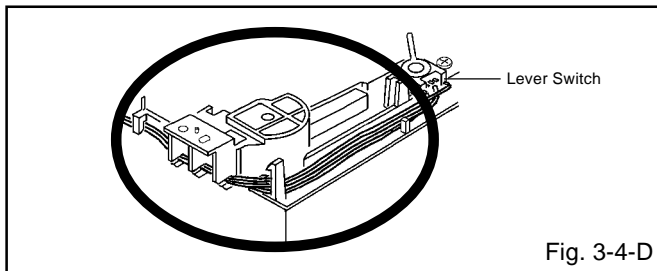
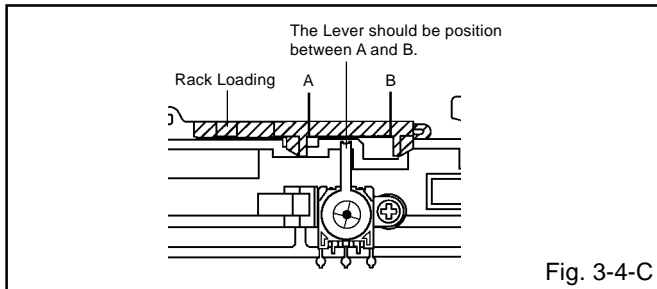
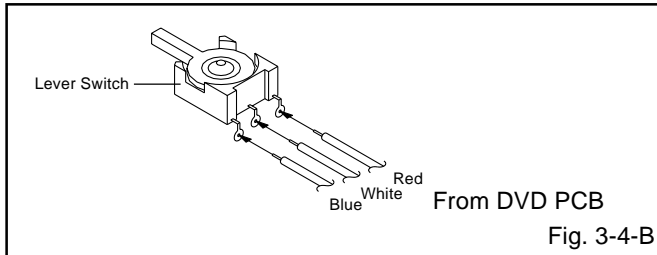
1. Remove the screw ①.
2. Remove the Lever Switch.
3. Remove the 2 Insulator (R).
4. Press the Clamper and rotate the Clamper Plate clockwise, then unlock the 3 supports ②.
5. Remove the Clamper Plate, Clamper Magnet and Clamper.



# DISASSEMBLY INSTRUCTIONS

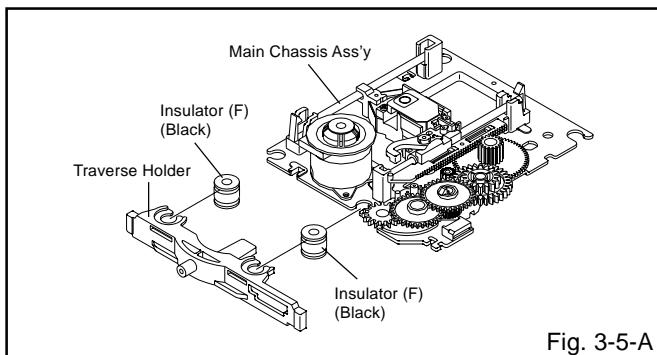
## NOTE

1. When installing the Clamper Magnet, install it with the green face up.
2. When installing the wire of the Lever Switch, install it correctly as Fig. 3-4-B.
3. When installing the Lever Switch, install it correctly as Fig. 3-4-C.
4. In case of the Lever Switch installation, hook the wire on the Main Frame as shown Fig. 3-4-D.



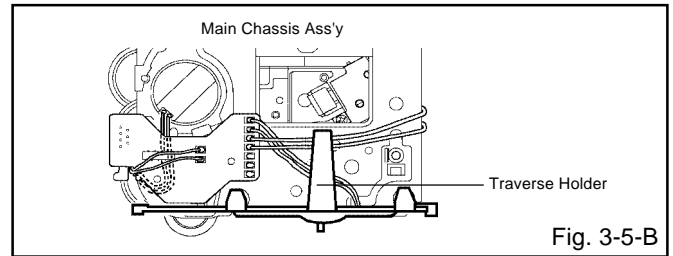
## 3-5: TRAVERSE HOLDER/INSULATOR (F) (Refer to Fig. 3-5-A)

1. Remove the Traverse Holder.
2. Remove the 2 Insulator (F).



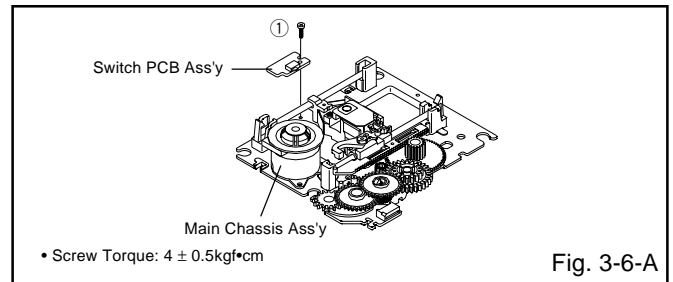
## NOTE

1. After the installing of the Traverse Holder, check if the wire is like Fig. 3-5-B.



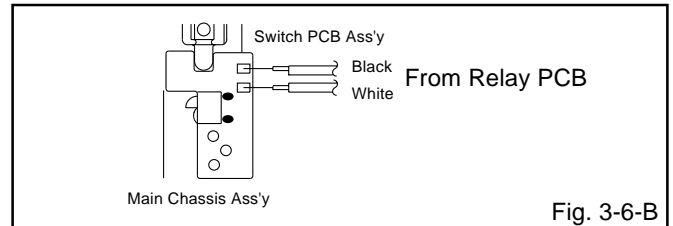
## 3-6: SWITCH PCB ASS'Y (Refer to Fig. 3-6-A)

1. Remove the screw ①.
2. Remove the Switch PCB Ass'y.



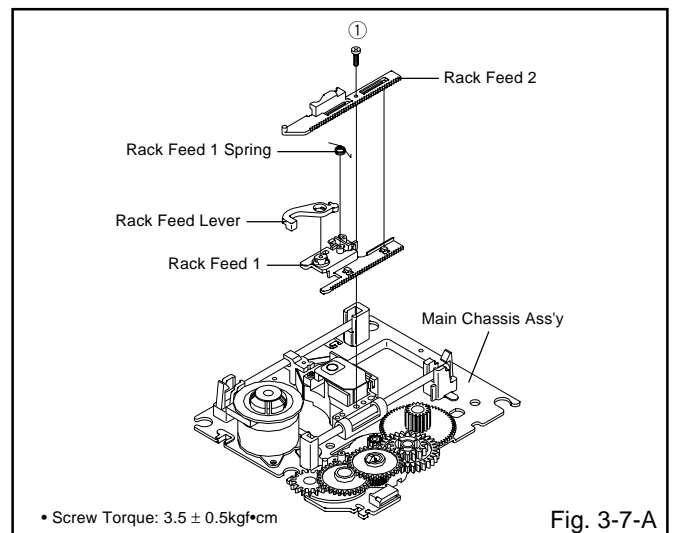
## NOTE

1. When installing the wire of the Switch PCB, install it correctly as Fig. 3-6-B.



## 3-7: RACK FEED ASS'Y (Refer to Fig. 3-7-A)

1. Remove the screw ①.
2. Remove the Rack Feed 1 Spring, Rack Feed 1/2 and Rack Feed Lever.



# DISASSEMBLY INSTRUCTIONS

## NOTE

1. After the assembly of the Rack Feed, check if the Rack Feed 1/2 is moving smoothly. (Refer to Fig. 3-7-B)
2. In case of the Rack Feed Ass'y installation, install correctly as Fig. 3-7-C.

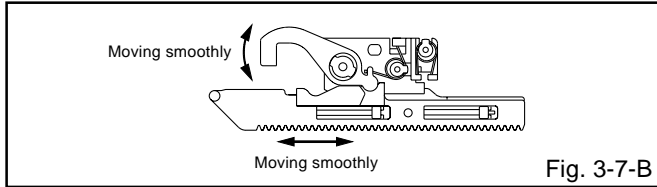


Fig. 3-7-B

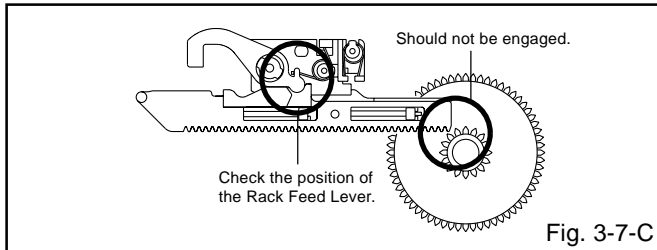


Fig. 3-7-C

## 3-8: RELAY PCB ASS'Y (Refer to Fig. 3-8-A)

1. Remove the screw ①.
2. Remove the Relay PCB Ass'y.

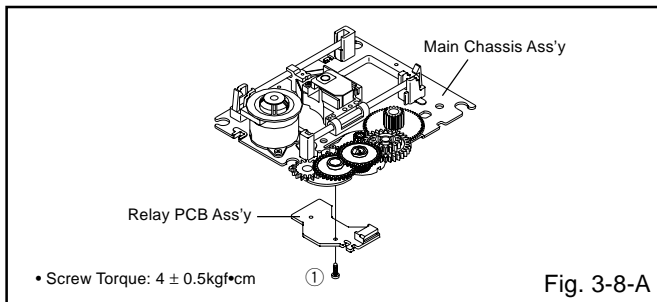


Fig. 3-8-A

## NOTE

1. When installing the wire of the Relay PCB, install it correctly as Fig. 3-8-B.

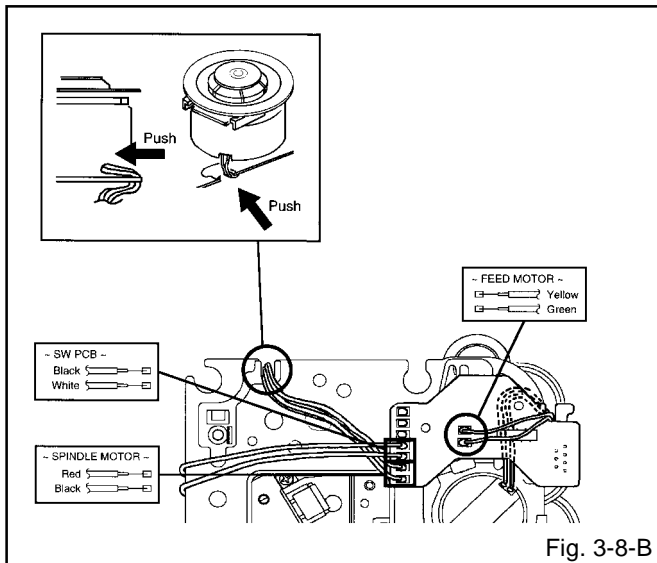


Fig. 3-8-B

## 3-9: GEAR (Refer to Fig. 3-9-A)

1. Unlock the support ①.
2. Remove the Middle Gear 1/2/3, Idler Gear and Feed Gear.

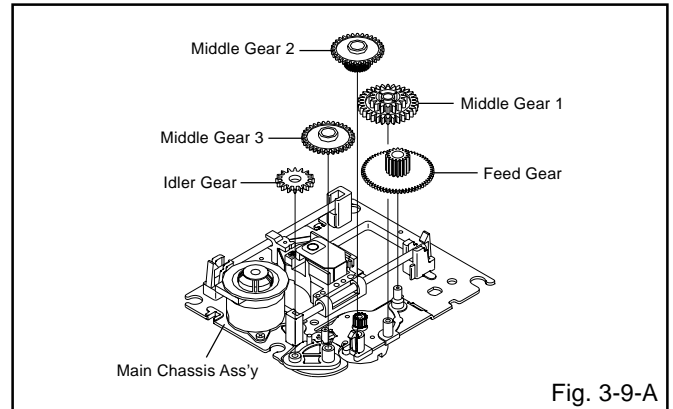


Fig. 3-9-A

## NOTE

1. In case of the Idler Gear installation, install correctly as Fig. 3-9-B.
2. When installing the Middle Gear 2, check if the Middle Gear 2 is locked correctly as Fig. 3-9-C.

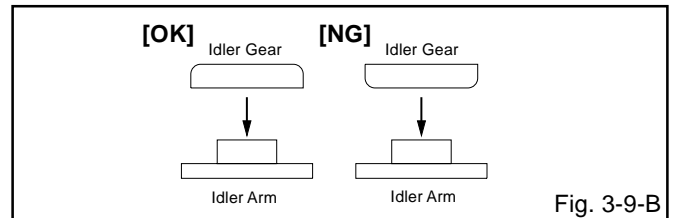


Fig. 3-9-B

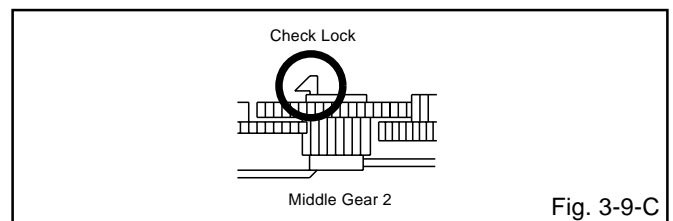


Fig. 3-9-C

## 3-10: IDLER ARM (Refer to Fig. 3-10)

1. Remove the Idler Arm.

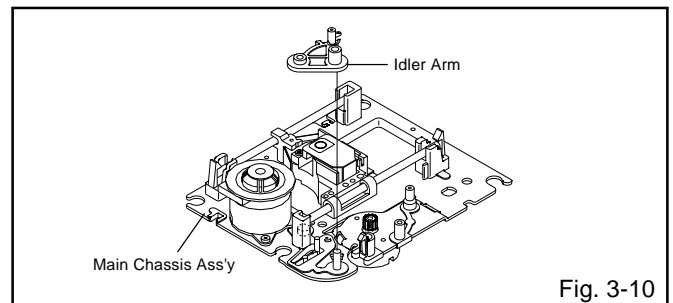
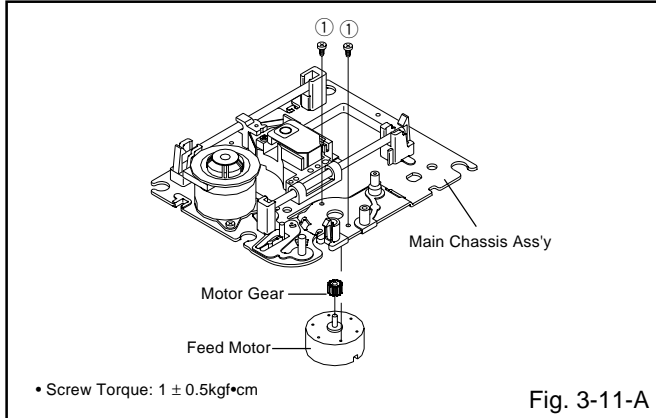


Fig. 3-10

## DISASSEMBLY INSTRUCTIONS

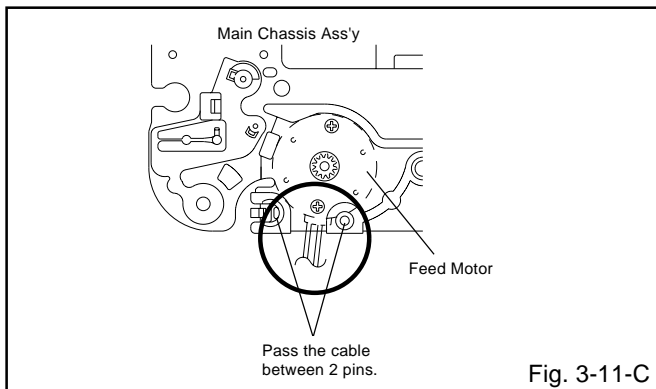
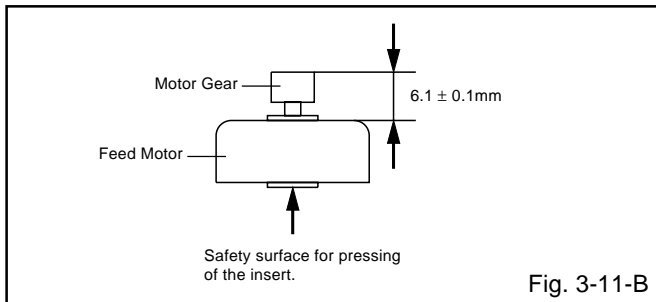
### 3-11: FEED MOTOR (Refer to Fig. 3-11-A)

1. Remove the 2 screws ①.
2. Remove the Feed Motor.
3. Remove the Motor Gear.



### NOTE

1. In case of the Motor Gear installation, check if the value of the Fig. 3-11-B is correct.
2. When installing the Feed Motor, check if the cable is positioned as Fig. 3-11-C.



# DISASSEMBLY INSTRUCTIONS

## 4. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

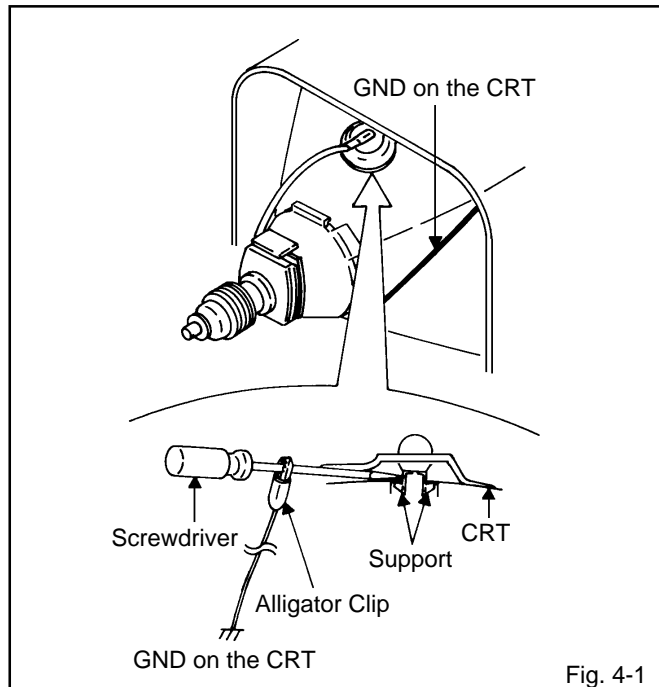
- \* After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
- \* Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

### REMOVAL

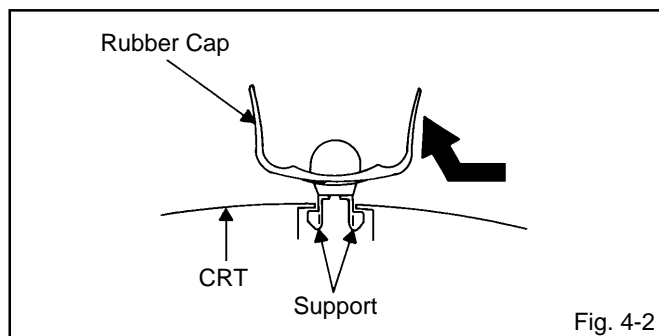
1. Follow the steps as follows to discharge the Anode Cap.  
(Refer to Fig. 4-1.)

Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground. While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver.

A cracking noise will be heard as the voltage is discharged.



2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support.  
(Refer to Fig. 4-2.)



3. After one side is removed, pull in the opposite direction to remove the other.

### NOTE

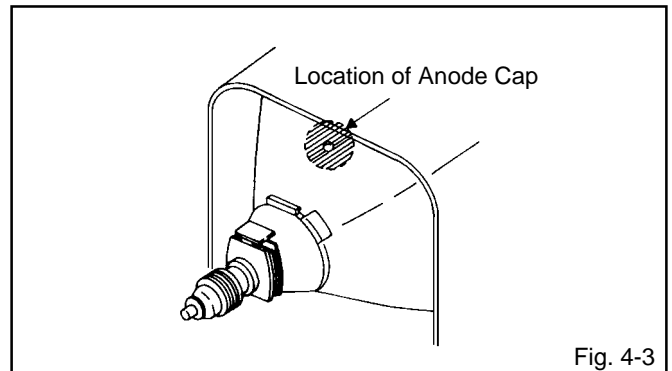
Take care not to damage the Rubber Cap.

### INSTALLATION

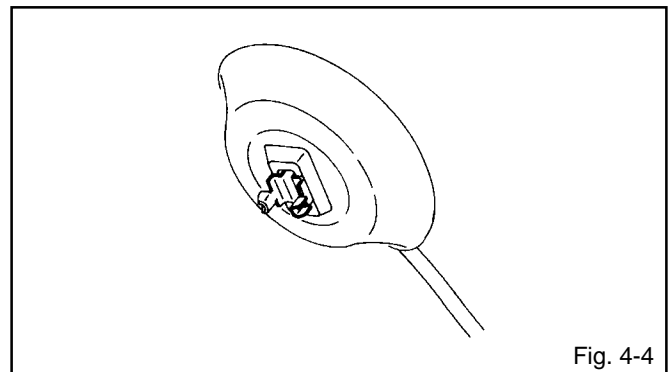
1. Clean the spot where the cap was located with a small amount of alcohol. (Refer to Fig. 4-3.)

### NOTE

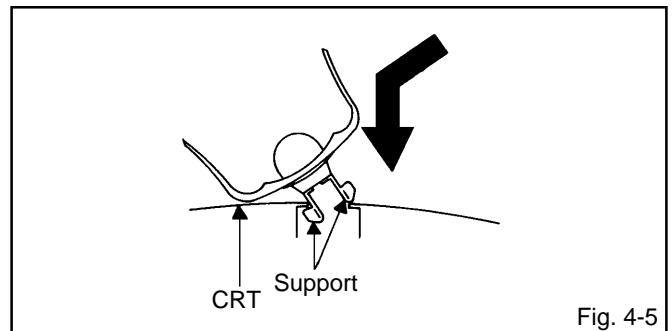
Confirm that there is no dirt, dust, etc. at the spot where the cap was located.



2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. (Refer to Fig. 4-4.)



4. Insert one end of the Anode Support into the anode button, then the other as shown in Fig. 4-5.



5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

## DISASSEMBLY INSTRUCTIONS

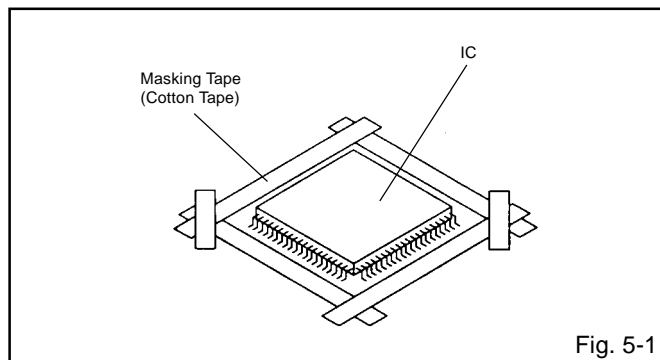
### 5. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

#### REMOVAL

1. Put the Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. (Refer to Fig. 5-1.)

#### NOTE

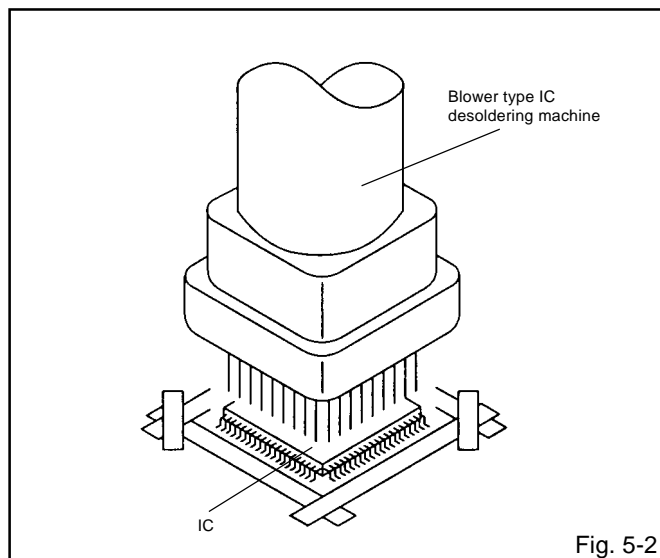
Masking is carried out on all the parts located within 10 mm distance from IC leads.



2. Heat the IC leads using a blower type IC desoldering machine. (Refer to Fig. 5-2.)

#### NOTE

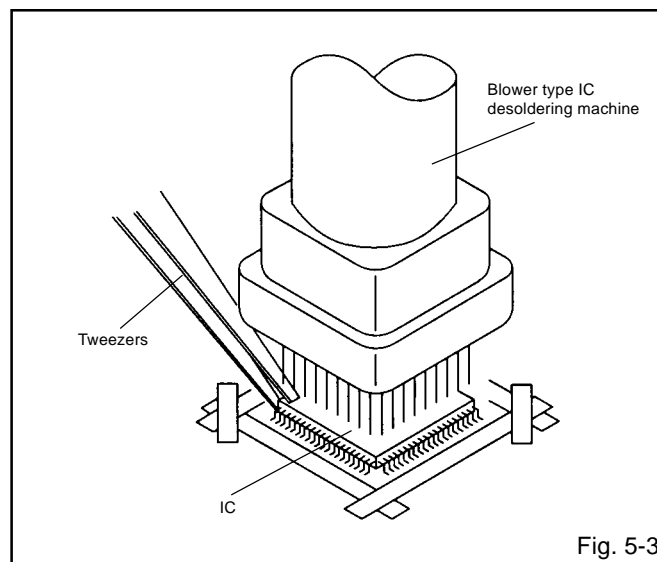
Do not add the rotating and the back and forth directions force on the IC, until IC can move back and forth easily after desoldering the IC leads completely.



3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. (Refer to Fig. 5-3.)

#### NOTE

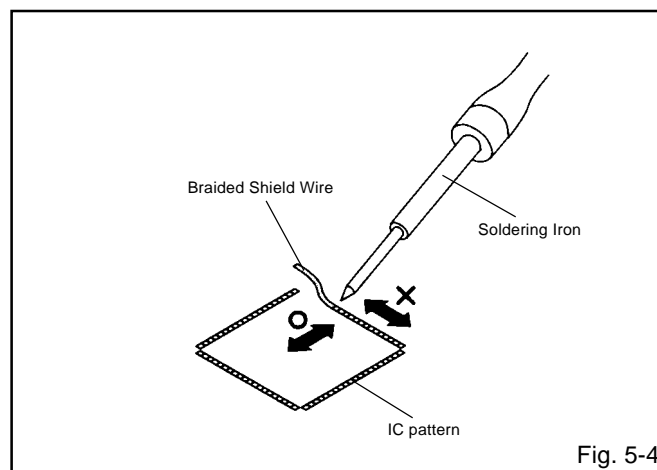
Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.



4. Peel off the Masking Tape.
5. Absorb the solder left on the pattern using the Braided Shield Wire. (Refer to Fig. 5-4.)

#### NOTE

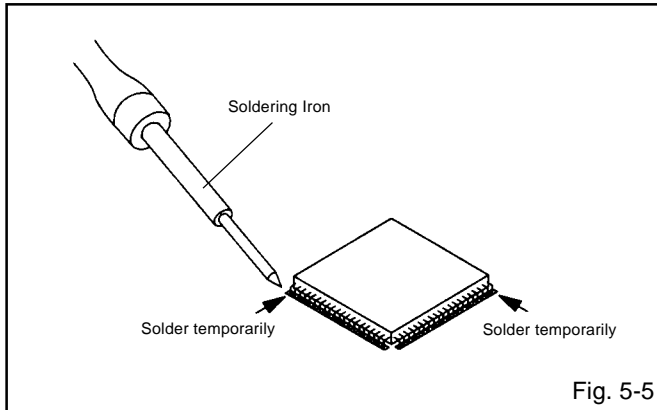
Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.



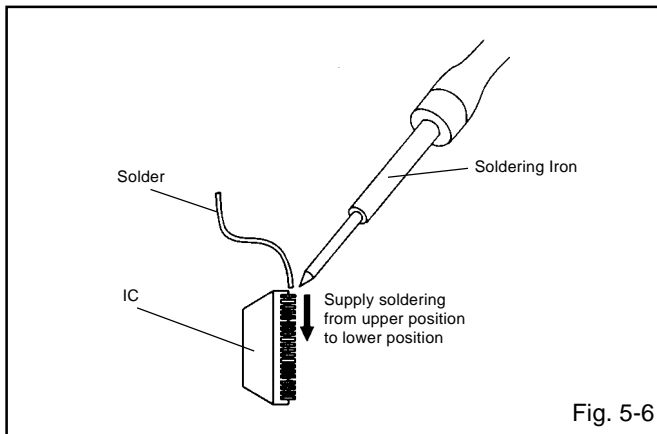
# DISASSEMBLY INSTRUCTIONS

## INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. **(Refer to Fig. 5-5.)**



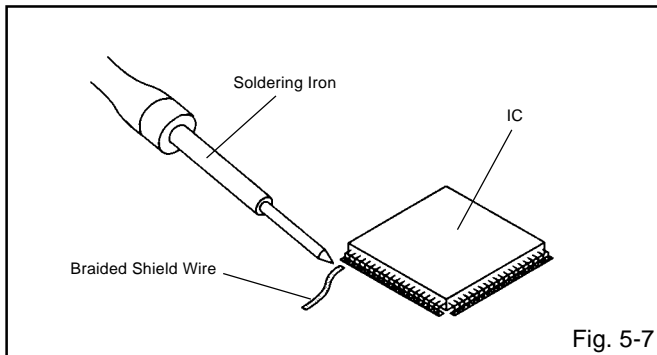
2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. **(Refer to Fig. 5-6.)**



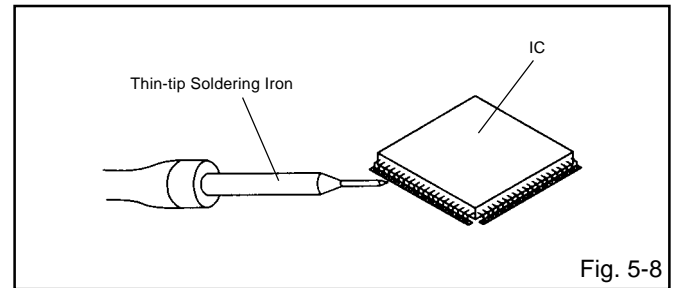
3. Absorb the solder left on the lead using the Braided Shield Wire. **(Refer to Fig. 5-7.)**

### NOTE

Do not absorb the solder to excess.



4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. **(Refer to Fig. 5-8.)**



5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass. Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

### NOTE

When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, always be sure to replace the IC in this case.



## KEY TO ABBREVIATIONS

<b>A</b>	<b>A/C</b>	: Audio/Control	<b>H</b>	<b>H.P.F</b>	: High Pass Filter
	<b>ACC</b>	: Automatic Color Control		<b>H.SW</b>	: Head Switch
	<b>AE</b>	: Audio Erase		<b>Hz</b>	: Hertz
	<b>AFC</b>	: Automatic Frequency Control	<b>I</b>	<b>IC</b>	: Integrated Circuit
	<b>AFT</b>	: Automatic Fine Tuning		<b>IF</b>	: Intermediate Frequency
	<b>AFT DET</b>	: Automatic Fine Tuning Detect		<b>IND</b>	: Indicator
	<b>AGC</b>	: Automatic Gain Control		<b>INV</b>	: Inverter
	<b>AMP</b>	: Amplifier	<b>K</b>	<b>KIL</b>	: Killer
	<b>ANT</b>	: Antenna	<b>L</b>	<b>L</b>	: Left
	<b>A.PB</b>	: Audio Playback		<b>LED</b>	: Light Emitting Diode
	<b>APC</b>	: Automatic Phase Control		<b>LIMIT AMP</b>	: Limiter Amplifier
	<b>ASS'Y</b>	: Assembly		<b>LM, LDM</b>	: Loading Motor
	<b>AT</b>	: All Time		<b>LP</b>	: Long Play
	<b>AUTO</b>	: Automatic		<b>L.P.F</b>	: Low Pass Filter
	<b>A/V</b>	: Audio/Video		<b>LUMI.</b>	: Luminance
<b>B</b>	<b>BGP</b>	: Burst Gate Pulse	<b>M</b>	<b>M</b>	: Motor
	<b>BOT</b>	: Beginning of Tape		<b>MAX</b>	: Maximum
	<b>BPF</b>	: Bandpass Filter		<b>MINI</b>	: Minimum
	<b>BRAKE SOL</b>	: Brake Solenoid		<b>MIX</b>	: Mixer, mixing
	<b>BUFF</b>	: Buffer		<b>MM</b>	: Monostable Multivibrator
	<b>B/W</b>	: Black and White		<b>MOD</b>	: Modulator, Modulation
<b>C</b>	<b>C</b>	: Capacitance, Collector		<b>MPX</b>	: Multiplexer, Multiplex
	<b>CASE</b>	: Cassette		<b>MS SW</b>	: Mecha State Switch
	<b>CAP</b>	: Capstan	<b>N</b>	<b>NC</b>	: Non Connection
	<b>CARR</b>	: Carrier		<b>NR</b>	: Noise Reduction
	<b>CH</b>	: Channel	<b>O</b>	<b>OSC</b>	: Oscillator
	<b>CLK</b>	: Clock		<b>OPE</b>	: Operation
	<b>CLOCK (SY-SE)</b>	: Clock (Syscon to Servo)	<b>P</b>	<b>PB</b>	: Playback
	<b>COMB</b>	: Combination, Comb Filter		<b>PB CTL</b>	: Playback Control
	<b>CONV</b>	: Converter		<b>PB-C</b>	: Playback-Chrominance
	<b>CPM</b>	: Capstan Motor		<b>PB-Y</b>	: Playback-Luminance
	<b>CTL</b>	: Control		<b>PCB</b>	: Printed Circuit Board
	<b>CYL</b>	: Cylinder		<b>P. CON</b>	: Power Control
	<b>CYL-M</b>	: Cylinder-Motor		<b>PD</b>	: Phase Detector
	<b>CYL SENS</b>	: Cylinder-Sensor		<b>PG</b>	: Pulse Generator
<b>D</b>	<b>DATA (SY-CE)</b>	: Data (Syscon to Servo)		<b>P-P</b>	: Peak-to Peak
	<b>dB</b>	: Decibel	<b>R</b>	<b>R</b>	: Right
	<b>DC</b>	: Direct Current		<b>REC</b>	: Recording
	<b>DD Unit</b>	: Direct Drive Motor Unit		<b>REC-C</b>	: Recording-Chrominance
	<b>DEMOD</b>	: Demodulator		<b>REC-Y</b>	: Recording-Luminance
	<b>DET</b>	: Detector		<b>REEL BRK</b>	: Reel Brake
	<b>DEV</b>	: Deviation		<b>REEL S</b>	: Reel Sensor
<b>E</b>	<b>E</b>	: Emitter		<b>REF</b>	: Reference
	<b>EF</b>	: Emitter Follower		<b>REG</b>	: Regulated, Regulator
	<b>EMPH</b>	: Emphasis		<b>REW</b>	: Rewind
	<b>ENC</b>	: Encoder		<b>REV, RVS</b>	: Reverse
	<b>ENV</b>	: Envelope		<b>RF</b>	: Radio Frequency
	<b>EOT</b>	: End of Tape		<b>RMC</b>	: Remote Control
	<b>EQ</b>	: Equalizer		<b>RY</b>	: Relay
	<b>EXT</b>	: External	<b>S</b>	<b>S. CLK</b>	: Serial Clock
<b>F</b>	<b>F</b>	: Fuse		<b>S. COM</b>	: Sensor Common
	<b>FBC</b>	: Feed Back Clamp		<b>S. DATA</b>	: Serial Data
	<b>FE</b>	: Full Erase		<b>SEG</b>	: Segment
	<b>FF</b>	: Fast Forward, Flip-flop		<b>SEL</b>	: Select, Selector
	<b>FG</b>	: Frequency Generator		<b>SENS</b>	: Sensor
	<b>FL SW</b>	: Front Loading Switch		<b>SER</b>	: Search Mode
	<b>FM</b>	: Frequency Modulation		<b>SI</b>	: Serial Input
	<b>FSC</b>	: Frequency Sub Carrier		<b>SIF</b>	: Sound Intermediate Frequency
	<b>FWD</b>	: Forward		<b>SO</b>	: Serial Output
<b>G</b>	<b>GEN</b>	: Generator		<b>SOL</b>	: Solenoid
	<b>GND</b>	: Ground		<b>SP</b>	: Standard Play

## KEY TO ABBREVIATIONS

<b>S</b>	<b>STB</b>	:	Serial Strobe
	<b>SW</b>	:	Switch
	<b>SYNC</b>	:	Synchronization
	<b>SYNC SEP</b>	:	Sync Separator, Separation
<b>T</b>	<b>TR</b>	:	Transistor
	<b>TRAC</b>	:	Tracking
	<b>TRICK PB</b>	:	Trick Playback
	<b>TP</b>	:	Test Point
<b>U</b>	<b>UNREG</b>	:	Unregulated
<b>V</b>	<b>V</b>	:	Volt
	<b>VCO</b>	:	Voltage Controlled Oscillator
	<b>VIF</b>	:	Video Intermediate Frequency
	<b>VP</b>	:	Vertical Pulse, Voltage Display
	<b>V.PB</b>	:	Video Playback
	<b>VR</b>	:	Variable Resistor
	<b>V.REC</b>	:	Video Recording
	<b>VSF</b>	:	Visual Search Fast Forward
	<b>VSR</b>	:	Visual Search Rewind
	<b>VSS</b>	:	Voltage Super Source
	<b>V-SYNC</b>	:	Vertical-Synchronization
	<b>VT</b>	:	Voltage Tuning
<b>X</b>	<b>X'TAL</b>	:	Crystal
<b>Y</b>	<b>Y/C</b>	:	Luminance/Chrominance

## SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.  
To enter SERVICE MODE, press and hold main unit and remocon key simultaneously.

Set Key	Remocon Key	Standard Time (seconds)	Operations
VOL. (-) MIN	0	2	Releasing of V-CHIP PASSWORD.
VOL. (-) MIN	1	2	Initialization of the factory. NOTE: Do not use this for the normal servicing. If you set a factory initialization, the memories are reset such as the clock setting, the channel setting, the POWER ON total hours, and PLAY/REC total hours.
VOL. (-) MIN	2	2	Horizontal position adjustment of OSD. NOTE: Also can be adjusted by using the Adjustment MENU. Refer to the "ELECTRICAL ADJUSTMENT" (OSD HORIZONTAL).
VOL. (-) MIN	3	2	Adjust the PG SHIFTER automatically. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
VOL. (-) MIN	4	2	Adjust the PG SHIFTER manually. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
VOL. (-) MIN	5	2	Adjusting of the Tracking to the center position.
VOL. (-) MIN	6	2	POWER ON total hours and PLAY/REC total hours are displayed on the screen. Refer to the "PREVENTIVE CHECKS AND SERVICE INTERVALS" (CONFIRMATION OF HOURS USED).  Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "WHEN REPLACING EEPROM (MEMORY) IC".
VOL. (-) MIN	9	2	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).
REC/OTR	4	2	Initialization of the factory on DVD. NOTE: Do not use this for the normal servicing. The function will only work without the setting of DVD disc at DVD mode.
STOP (DVD)	2	2	Releasing of PARENTAL LOCK. Refer to the "PARENTAL CONTROL - RATING LEVEL". NOTE: The function will only work without the setting of DVD disc at DVD mode.
STOP (DVD)	9	3	Tray cannot be opened. Refer to the "TRAY LOCK". NOTE: No indications on the screen when the Tray Lock is setting.

Set Key	Set Key	Standard Time (seconds)	Operations
VOL. (-) MIN	FF	2	The BOT, EOT, and the Reel Sensor do not work and the VCR deck can be operated without a cassette tape. Refer to the "PREPARATION FOR SERVICING"

## PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage.

Parts replacing time does not mean the life span for individual parts.

Also, long term storage or misuse may cause transformation and aging of rubber parts.

The following list means standard hours, so the checking hours depends on the conditions.

Time Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	2,500 hours	Notes
Audio Control Head	■	■	■	●	●	Clean those parts in contact with the tape.
Full Erase Head (Recorder only)	■	■	■	●	●	
Capstan Belt		●	●	●	●	Clean the rubber, and parts which the rubber touches.
Pinch Roller	■	●	●	●	●	
Capstan DD Unit		●	●	●	●	
Loading Motor					●	
Tension Band		●	●	●	●	
T Brake Band		●	●	●	●	
Clutch Ass'y		●	●	●	●	
Idler Arm Ass'y		●	●	●	●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	●	●	●	●	Clean the Head

■ : Clean

● : Check it and if necessary, replace it.

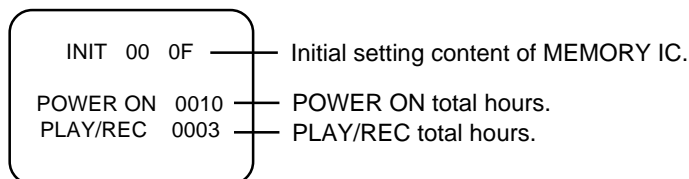
## CONFIRMATION OF HOURS USED

POWER ON total hours and PLAY/REC total hours can be checked on the screen.

Total hours are displayed in 16 system of notation.

**NOTE: If you set a factory initialization, the total hours is reset to "0".**

1. Set the VOLUME to minimum.
2. Press both VOL. DOWN button on the set and the Channel button (6) on the remote control for more than 2 seconds.
3. After the confirmation of using hours, turn off the power.



(16 x 16 x 16 x thousands digit value) + (16 x 16 x hundreds digit value) + (16 x tens digit value) + (ones digit value)

# PREVENTIVE CHECKS AND SERVICE INTERVALS

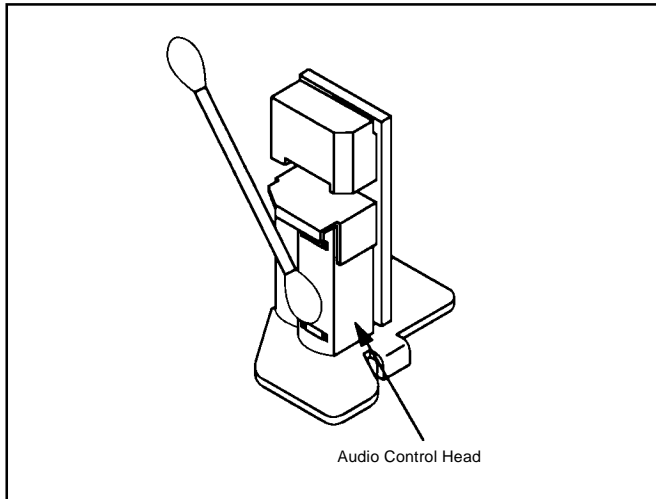
## CLEANING

### NOTE

After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

### 1. AUDIO CONTROL HEAD

Clean the Audio Control Head with the cotton stick soaked by alcohol. Clean the full erase head in the same manner. **(Refer to the figure below.)**



### 2. TAPE RUNNING SYSTEM

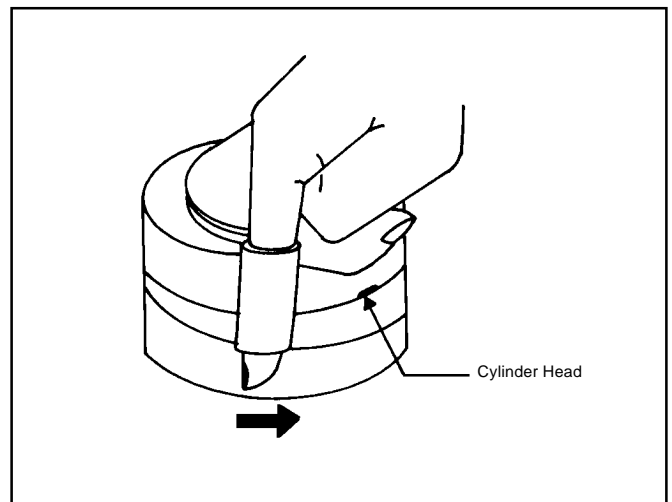
When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

### 3. CYLINDER

Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). **(Refer to the figure below.)**

### NOTE

Do not exert force against the cylinder head. Do not move the chamois upward or downward on the head. Use the chamois one by one.



## WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

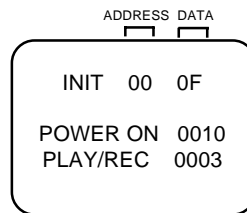
**NOTE: No need setting for the position of the mark @ due to the adjustment value.**

**No need setting for after INI 44 due to the adjustment value.**

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	0F	40	34	02	C3	DD	47	22	86	44	D0	08	A6	A1	86	45
10	40	0F	E3	52	03	87	00	48	00	F6	15	4B	1C	54	83	B2
20	9A	97	8C	A5	B7	A5	91	B6	1A	0B	3D	08	37	16	27	30
30	45	31	19	40	00	@	@	00	00	23	FF	FF	FF	80	88	83
40	88	89	88	FF	FF	---	---	---	---	---	---	---	---	---	---	---

**Table 1**

1. Enter DATA SET mode by setting VOLUME to minimum.
2. Press both VOL. DOWN button on the set and the Channel button **(6)** on the remote control for more than 2 seconds. ADDRESS and DATA should appear as FIG 1.



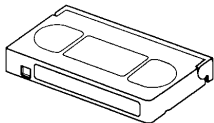
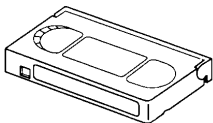
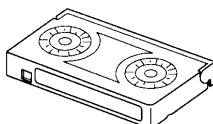
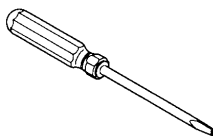
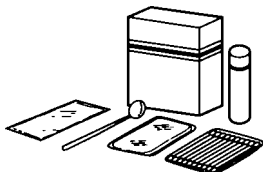



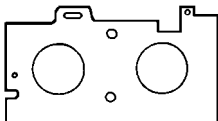
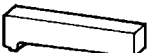
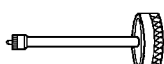
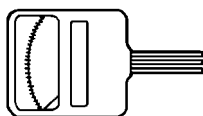
**Fig. 1**

3. ADDRESS is now selected and should "blink". Using the UP or DOWN button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press ENTER to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using UP or DOWN button until required DATA value has been selected.
6. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

**After the data input, set to the initializing of shipping.**

9. Turn POWER on.
  10. Press both VOL. DOWN button on the set and the Channel button **(1)** on the remote control for more than 2 seconds.
  11. After the finishing of the initializing of shipping, the unit will turn off automatically.
- The unit will now have the correct DATA for the new MEMORY IC.

## SERVICING FIXTURES AND TOOLS

<p>Alignment Tape</p>  <p>ST-N5 ST-NF</p>	<p>Back tension cassette gauge</p>  <p>70909103</p>	<p>Torque cassette gauge (KT-300NR)</p>  <p>70909199</p>	<p>Taper nut driver</p>  <p>70909228</p>
<p>VTR cleaning kit</p> 	<p>VTR lubrication kit</p> 	<p>Grease</p> 	<p>JG002B Adapter JG002E Dial Torque Gauge (10~90gf•cm) JG002F (60~600gf•cm)</p> 
<p>JG022 Master Plane</p> 	<p>JG024A Reel Disk Height Adjustment Jig</p> 	<p>JG153 X Value Adjustment Screwdriver</p> 	<p>JG185 Tentelometer</p> 

Ref. No.	Part No.	Parts Name	Remarks
JG002B	APJG002B00	Adapter	VSR Torque, Brake Torque (S Reel/T Reel Ass'y)
JG002E	APJG002E00	Dial Torque Gauge (10~90gf•cm)	Brake Torque (T Reel Ass'y)
JG002F	APJG002F00	Dial Torque Gauge (60~600gf•cm)	VSR Torque, Brake Torque (S Reel)
JG022	APJG022000	Master Plane	Reel Disk Height Adjustment
JG024A	APJG024A00	Reel Disk Height Adjustment Jig	Reel Disk Height Adjustment
JG153	APJG153000	X Value Adjustment Screwdriver	X Value Adjustment
JG185	APJG185000	Tentelometer	Confirmation of Tape Tension on Playback

## PREPARATION FOR SERVICING

1. Set the VOLUME to minimum.
2. Press both VOL. DOWN button on the set and the FF button on the set for more than 2 seconds.  
(The BOT, EOT, and the Reel Sensor do not work and the VCR deck can be operated without a cassette tape.)
3. In case of using a cassette tape, press the STOP/EJECT button to insert or eject a cassette tape.  
Turn on the power and re-check the cable before checking the trouble points.

# MECHANICAL ADJUSTMENTS

## 1. CONFIRMATION AND ADJUSTMENT

Read the following NOTES before starting work.

- Place an object which weighs between 450g~500g on the Cassette Tape to keep it steady when you want to make the tape run without the Cassette Holder. (Do not place an object which weighs over 500g.)

### 1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

- Turn on the power and set to the STOP mode.
- Set the master plane (**JG022**) and reel disk height adjustment jig (**JG024A**) on the mechanism framework, taking care not to scratch the drum, as shown in **Fig. 1-1-A**.
- While turning the reel and confirm the following points. Check if the surface "A" of reel disk is lower than the surface "B" of reel disk height adjustment jig (**JG024A**) and is higher than the surface "C". If it is not passed, place the height adjustment washers and adjust to  $10(+2, -0)$ mm.
- Adjust the other reel in the same way.

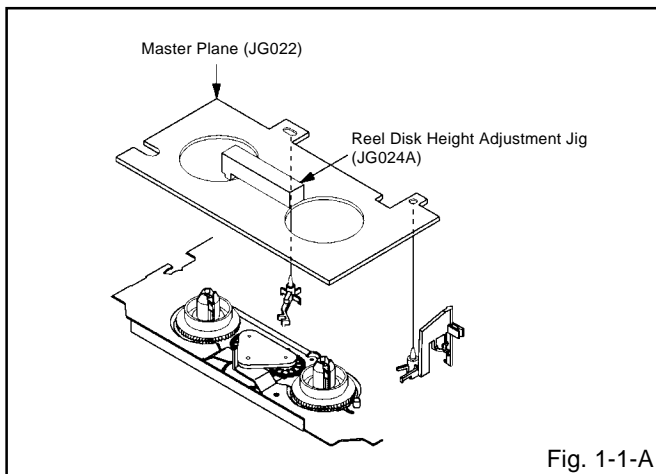


Fig. 1-1-A

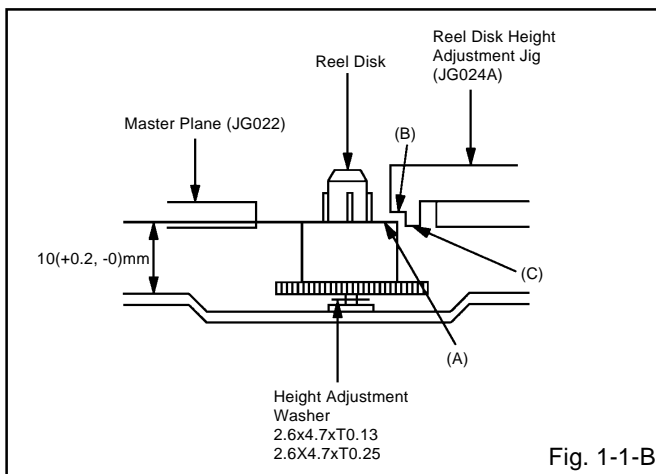


Fig. 1-1-B

### 1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

- Set to the PLAY mode.
- Adjust the adjusting section for the Tension Arm position so that the Tension Arm top is within the standard line of Main Chassis.
- While turning the S Reel clockwise, confirm that the edge of the Tension Arm is located in the position described above.

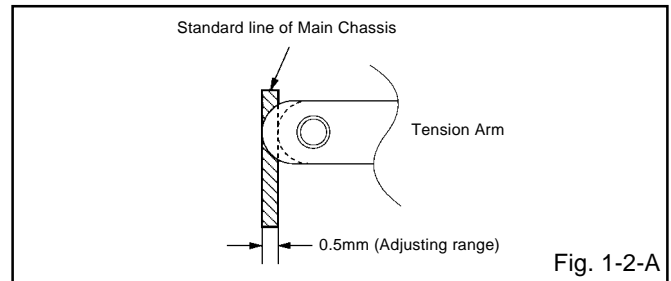


Fig. 1-2-A

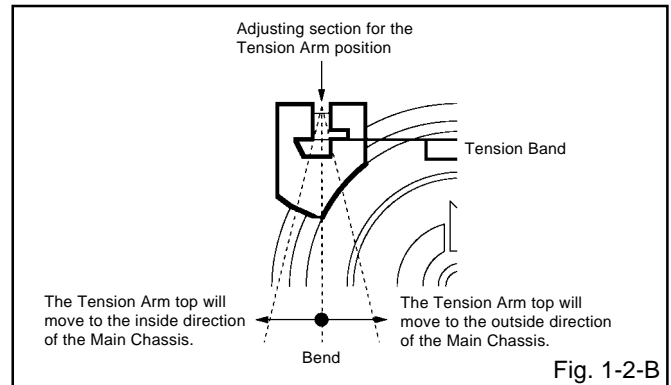


Fig. 1-2-B

### 1-3: CONFIRMATION OF PLAYBACK TORQUE AND BACK TENSION TORQUE DURING PLAYBACK

- Load a video tape (T-120) recorded in standard speed mode. Set the unit to the PLAY mode.
- Install the tentelometer (JG185) as shown in **Fig. 1-3**. Confirm that the meter indicates  $20 \pm 2$ gf in the beginning of playback.

#### • USING A CASSETTE TYPE TORQUE TAPE (KT-300NR)

- After confirmation and adjustment of Tension Post position (**Refer to item 1-2**), load the cassette type torque tape (**KT-300NR**) and set to the PLAY mode.
- Confirm that the right meter of the torque tape indicates 50~90gf•cm during playback in SP mode.
- Confirm that the left meter of the torque tape indicates 25~40gf•cm during playback in SP mode.

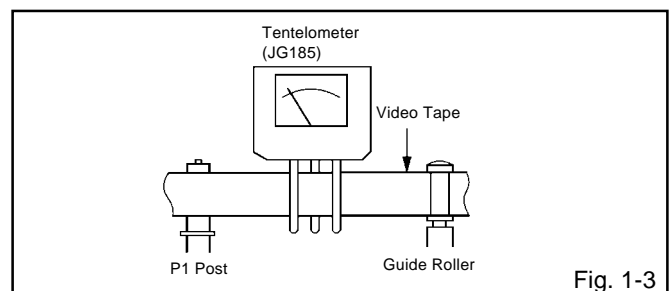


Fig. 1-3



# MECHANICAL ADJUSTMENTS

## 1-4: CONFIRMATION OF VSR TORQUE

1. Install the Torque Gauge (**JG002F**) and Adapter (**JG002B**) on the S Reel. Set to the Picture Search (Rewind) mode. (Refer to Fig.1-4-B)
2. Then, confirm that it indicates 120~180gf•cm.

### NOTE

Install the Torque Gauge on the reel disk firmly. Press the REW button to turn the reel disk.

## 1-5: CONFIRMATION OF REEL BRAKE TORQUE

(S Reel Brake) (Refer to Fig. 1-4-B)

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of Fig. 1-4-A.
2. Move the Idler Ass'y from the S Reel.
3. Install the Torque Gauge (**JG002F**) and Adapter (**JG002B**) on the S Reel. Turn the Torque Gauge (**JG002F**) clockwise.
4. Then, confirm that it indicates 60~100gf•cm.

(T Reel Brake) (Refer to Fig. 1-4-B)

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of Fig. 1-4-A.
2. Move the Idler Ass'y from the T Reel.
3. Install the Torque Gauge (**JG002E**) and Adapter (**JG002B**) on the T reel. Turn the Torque Gauge (**JG002E**) counterclockwise.
4. Then, confirm that it indicates 30~50gf•cm.

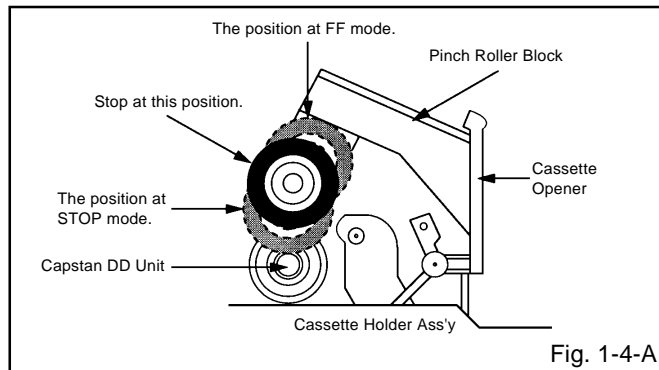


Fig. 1-4-A

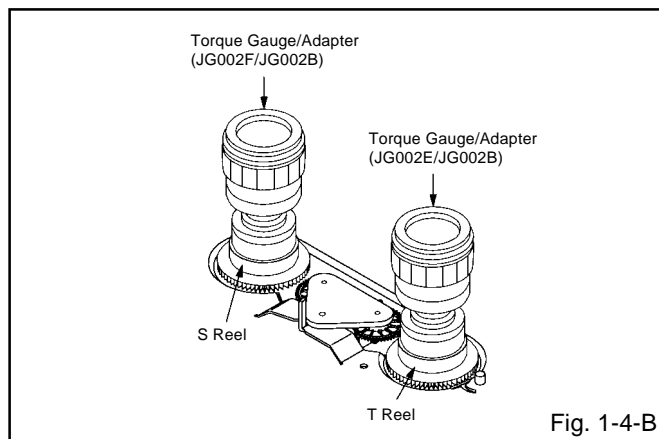


Fig. 1-4-B

### NOTE

If the torque is out of the range, replace the following parts.

Check item	Replacement Part
1-4	Idler Ass'y/Clutch Ass'y
1-5	S Reel side: S Reel/Tension Band/Tension Connect/Tension Arm Ass'y T Reel side: T Reel/T Brake Band//T Brake Spring/T Brake Arm

## 2. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING MECHANISM

Tape Running Mechanism is adjusted precisely at the factory. Adjustment is not necessary as usual. When you replace the parts of the tape running mechanism because of long term usage or failure, the confirmation and adjustment are necessary.

### 2-1: GUIDE ROLLER

1. Playback the VHS Alignment Tape.
2. Connect CH-1 of the oscilloscope to **TP4501 (Envelope)** and CH-2 to **TP102 (SW Pulse)**.
3. Press both VOL. DOWN button on the set and the Channel button (**5**) on the remote control for more than 2 seconds to set tracking to center.
4. Trigger with SW Pulse and observe the envelope. (Refer to Fig. 2-1-A)
5. When observing the envelope, adjust the Taper Nut Driver slightly until the envelope will be flat. Even if you press the Tracking Button, adjust so that flatness is not moved so much.
6. Adjust so that the A : B ratio is better than 3 : 2 as shown in Fig. 2-1-B, even if you press the Tracking Button to move the envelope (The envelope waveform will begin to decrease when you press the Tracking Button).
7. Adjust the PG shifter during playback. (Refer to the ELECTRICAL ADJUSTMENTS)

### NOTE

After adjustment, confirm and adjust A/C head. (Refer to item 2-2)

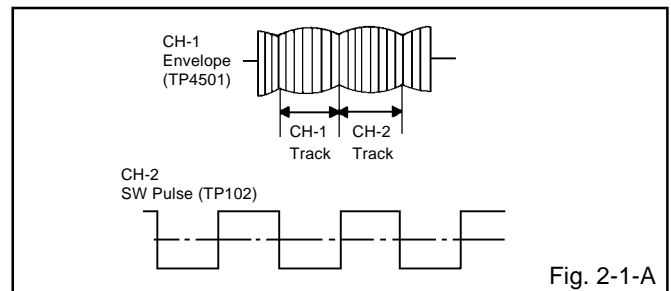


Fig. 2-1-A

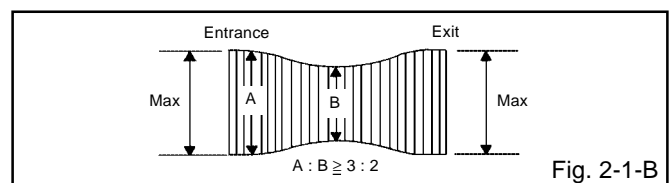


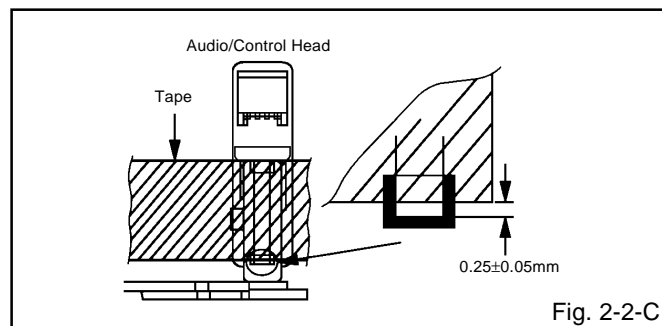
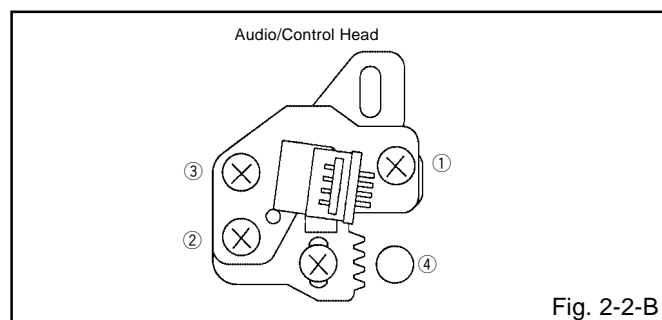
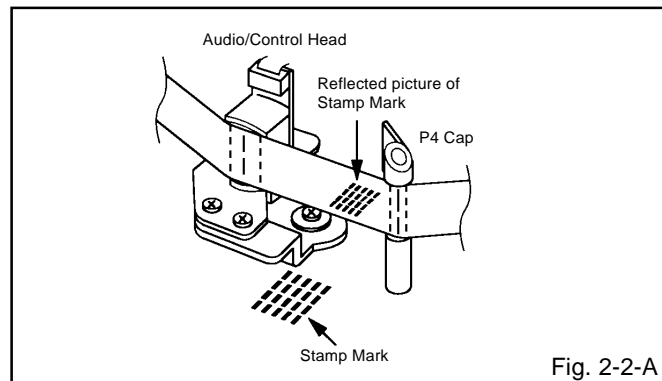
Fig. 2-1-B

## MECHANICAL ADJUSTMENTS

### 2-2: CONFIRMATION AND ADJUSTMENT OF AUDIO/CONTROL HEAD

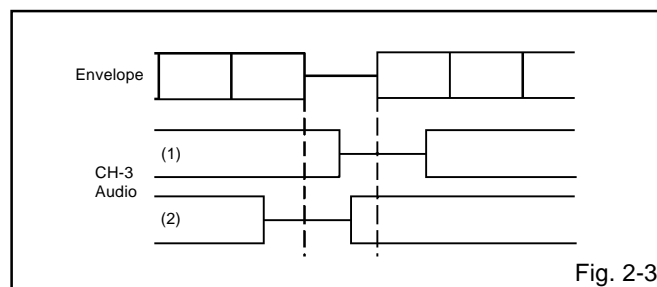
When the Tape Running Mechanism does not work well, adjust the following items.

1. Playback the VHS Alignment Tape.
2. Confirm that the reflected picture of stamp mark is appeared on the tape prior to P4 Cap as shown in **Fig. 2-2-A**.
  - a) When the reflected picture is distorted, turn the screw ① clockwise until the distortion is disappeared.
  - b) When the reflected picture is not distorted, turn the screw ① counterclockwise until little distortion is appeared, then adjust the a).
3. Turn the screw ② to set the audio level to maximum.
4. Confirm that the bottom of the Audio/ Control Head and the bottom of the tape is shown in **Fig. 2-2-C**.
  - c) When the height is not correct, turn the screw ③ to adjust the height. Then, adjust the 1~3 again.



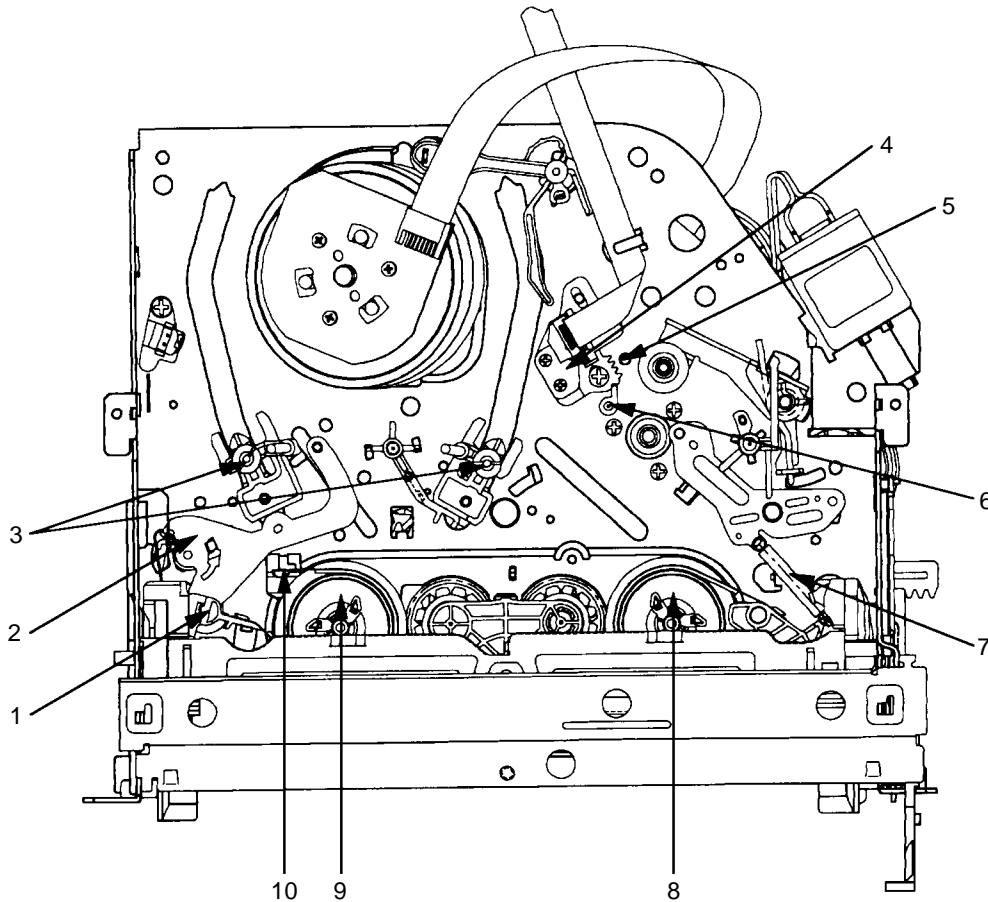
### 2-3: TAPE RUNNING ADJUSTMENT (X VALUE ADJUSTMENT)

1. Confirm and adjust the height of the Reel Disk. (**Refer to item 1-1**)
2. Confirm and adjust the position of the Tension Post. (**Refer to item 1-2**)
3. Adjust the Guide Roller. (**Refer to item 2-1**)
4. Confirm and adjust the Audio/Control Head. (**Refer to item 2-2**)
5. Connect CH-1 of the oscilloscope to **TP102**, CH-2 to **TP4501** and CH-3 to **HOT side of Audio Out Jack**.
6. Playback the VHS Alignment Tape.
7. Press both VOL. DOWN button on the set and the Channel button (5) on the remote control for more than 2 seconds to set tracking to center.
8. Set the X Value adjustment driver (**JG153**) to the ④ of **Fig. 2-2-B**. Adjust X value so that the envelope waveform output becomes maximum. Check if the relation between Audio and Envelope waveform becomes (1) or (2) of **Fig. 2-3**.



# MECHANICAL ADJUSTMENTS

## 3. MECHANISM ADJUSTMENT PARTS LOCATION GUIDE



- |                                   |  |
|-----------------------------------|--|
| 1. Tension Connect                | 6. P4 Post   |
| 2. Tension Arm                    | 7. T Brake Spring                                  |
| 3. Guide Roller                   | 8. T Reel  |
| 4. Audio/Control Head             | 9. S Reel  |
| 5. X value adjustment driver hole | 10. Adjusting section for the Tension Arm position |

# ELECTRICAL ADJUSTMENTS

## 1. BEFORE MAKING ELECTRICAL ADJUSTMENTS

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

### CAUTION

- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
- When you exchange IC and Transistor for a heat sink, apply the silicon grease on the contact section of the heat sink. Before applying new silicon grease, remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor).

Prepare the following measurement tools for electrical adjustments.

1. Oscilloscope
2. Digital Voltmeter
3. Multi-sound Generator
4. Pattern Generator

### On-Screen Display Adjustment

1. Set the VOLUME to minimum.
2. Press the VOL. DOWN button on the set and the Channel button (9) on the remote control for more than 2 seconds to appear the adjustment mode on the screen as shown in Fig. 1-1.

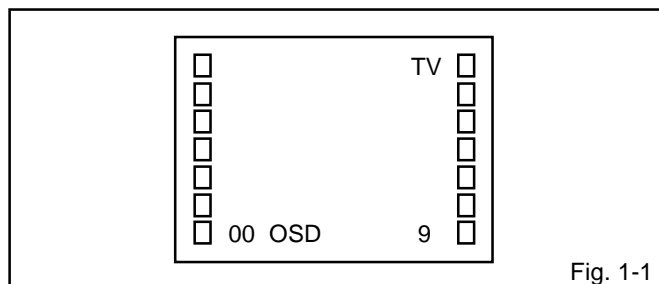


Fig. 1-1

3. Use the Channel UP/DOWN button or Channel button (0-9) on the remote control to select the options shown in Fig. 1-2.
4. Press the MENU button on the remote control to end the adjustments.

NO.	FUNCTION	NO.	FUNCTION
00	OSD H	19	BRI MIN
01	OSD C	20	CONT CENT
02	CUT OFF	21	CONT MAX
03	H.POSI	22	CONT MIN
04	H.BLK L	23	COL CENT
05	H.BLK R	24	COL MAX
06	V.SIZE	25	COL MIN
07	V.POSI	26	TINT
08	V.LIN	27	SHARP
09	VS.CORR	28	SUB BIAS
10	V.COMP	29	H.SIZE
11	R.BIAS	30	PARABOLA
12	G.BIAS	31	TRAPEZIUM
13	B.BIAS	32	COR TOP
14	R.DRV	33	COR BTM
15	G.DRV	34	H.COMP
16	B.DRV	35	T.STE
17	BRI CENT	38	H.FREQ
18	BRI MAX		

Fig. 1-2

## 2. BASIC ADJUSTMENTS (VCR SECTION)

### 2-1: PG SHIFTER

1. Connect CH-1 on the oscilloscope to TP102 and CH-2 to TP4201.
2. Playback the alignment tape.
3. Press both VOL. DOWN button on the set and the Channel button (5) on the remote control for more than 2 seconds to set tracking to center.
4. Press the VOL. DOWN button on the set and the channel button (3) on the remote control for more than 2 seconds until the indicator REC disappears. If the indicator REC disappears, adjustment is completed.

(If the above adjustments doesn't work well:)

5. Press the VOL. DOWN button on the set and the channel button (3) on the remote control for more than 2 seconds until the indicator REC disappears.
6. When the REC indicator is blinking, press both VOL. DOWN button on the set and the channel button (4) on the remote control for more than 2 seconds and adjust the Tracking +/- button until the arising to the down of Head Switching Pulse becomes  $6.5 \pm 0.5H$ .

(Refer to Fig. 2-1-A, B)

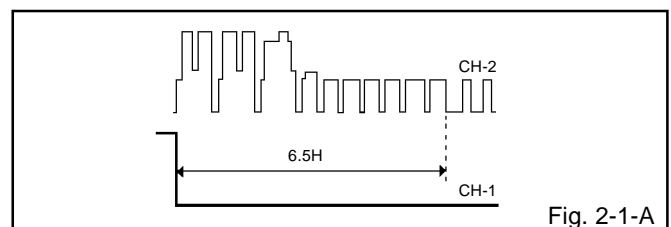


Fig. 2-1-A

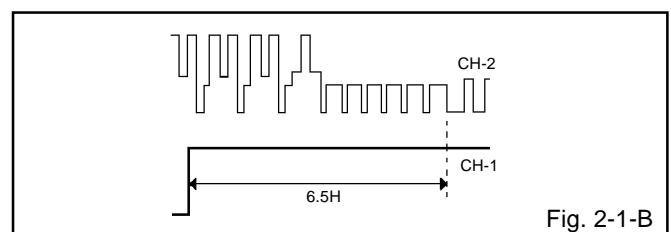


Fig. 2-1-B

# ELECTRICAL ADJUSTMENTS

## (TV SECTION)

### 2-2: CONSTANT VOLTAGE

1. Set condition is AV MODE without signal.
2. Using the remote control, set the brightness and contrast to normal position.
3. Connect the digital voltmeter to **TP401**.
4. Adjust the **VR1701** until the digital voltmeter is  $114 \pm 0.5V$ .

### 2-3: CUT OFF

1. Adjust the unit to the following settings.  
R.BIAS=127, G.BIAS=127, B.BIAS=127, R.DRV=63,  
G.DRV=07, B.DRV=63,
2. Place the set with Aging Test for more than 15 minutes.
3. Set condition is AV MODE without signal.
4. Using the remote control, set the brightness and contrast to normal position.
5. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(02)** on the remote control to select "CUT OFF".
6. Adjust the **Screen Volume** until a dim raster is obtained.

### 2-4: WHITE BALANCE

**NOTE:** Adjust after performing CUT OFF adjustment.

1. Place the set with Aging Test for more than 15 minutes.
2. Receive the gray scale pattern from the Pattern Generator.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(11)** on the remote control to select "R.BIAS".
5. Press the CH. UP/DOWN button on the remote control to select the "R.BIAS", "G.BIAS", "B.BIAS", "R.DRV", "B.DRV" or "G.DRV".
6. Adjust the VOL. UP/DOWN button on the remote control to whiten the R.BIAS, G.BIAS, B.BIAS, R.DRV, B.DRV, and G.DRV at each step tone sections equally.
7. Perform the above adjustments 5 and 6 until the white color is looked like a white.

### 2-5: FOCUS

1. Receive the monoscope pattern.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the **Focus Volume** until picture is distinct.

### 2-6: HORIZONTAL POSITION

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(03)** on the remote control to select "H.POSI".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.

### 2-7: VERTICAL POSITION

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(07)** on the remote control to select "V.POSI".
4. Check if the step No. V.POSI is "02".
5. Adjust the **VR404** until the horizontal line becomes fit to the notch of the shadow mask.

### 2-8: VERTICAL SIZE

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(06)** on the remote control to select "V.SIZE".
4. Press the VOL. UP/DOWN button on the remote control until the Up/Down OVER SCAN Quantity becomes equal to the Right/Left OVER SCAN Quantity.

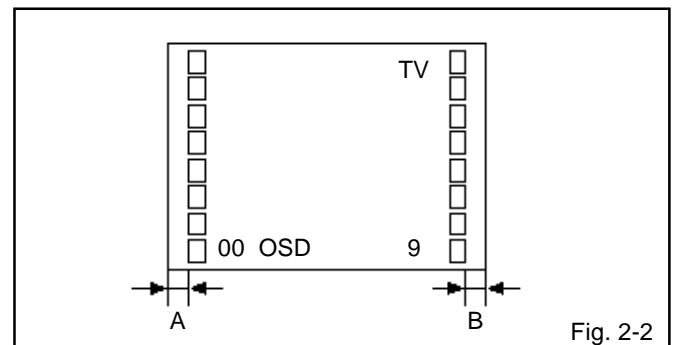
### 2-9: VERTICAL LINEARITY

**NOTE:** Adjust after performing adjustments in section 2-8.  
After the adjustment of Vertical Linearity, reconfirm the Vertical Position and Vertical Size adjustments.

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(08)** on the remote control to select "V.LIN".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes minimum.

### 2-10: OSD HORIZONTAL

1. Activate the adjustment mode display of **Fig. 1-1**.
2. Press the VOL. UP/DOWN button on the remote control until the difference of A and B becomes minimum. (**Refer to Fig. 2-2**)



# ELECTRICAL ADJUSTMENTS

## 2-11: BRIGHT CENTER

1. Receive the monoscope pattern. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(17)** on the remote control to select "BRI CENT".
4. Press the VOL. UP/DOWN button on the remote control until the white 10% is starting to be visible
5. Receive the monoscope pattern. (Audio Video Input)
6. Press the INPUT SELECT button on the remote control to set to the AV mode. Then perform the above adjustments 2~4.
7. Press the DVD button on the remote control to set to the DVD mode.
8. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(17)** on the remote control to select "BRI CENT".
9. Press the VOL. UP/DOWN button on the remote control to set the same step numbers as the AV mode.

## 2-12: TINT

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast, color and tint to normal position.
3. Connect the oscilloscope to **TP803**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(26)** on the remote control to select "TINT".
5. Press the VOL. UP/DOWN button on the remote control until the section "A" becomes a straight line (**Refer to Fig. 2-3**).
6. Receive the color bar pattern. (Audio Video Input)
7. Press the INPUT SELECT button on the remote control to set to the AV mode. Then perform the above adjustments 2~5.
8. Press the DVD button on the remote control to set to the DVD mode.
9. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(26)** on the remote control to select "TNT".
10. Press the VOL. UP/DOWN button on the remote control to set the same step numbers as the AV mode.

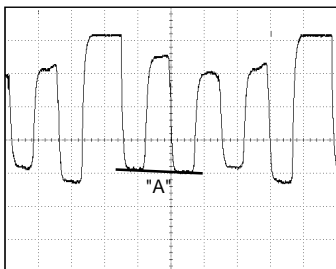


Fig. 2-3

## 2-13: COLOR CENTER

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast, color and tint to normal position.
3. Connect the oscilloscope to **TP802**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(23)** on the remote control to select "COL CENT".
5. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 scales on the screen of the oscilloscope.
6. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to  $85 \pm 5\%$  of the white level. (**Refer to Fig. 2-4**)
7. Receive the color bar pattern. (Audio Video Input)
8. Press the INPUT SELECT button on the remote control to set to the AV mode. Then perform the above adjustments 2~6.
9. Press the DVD button on the remote control to set to the DVD mode.
10. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(23)** on the remote control to select "COL CENT".
11. Press the VOL. UP/DOWN button on the remote control to set the same step numbers as the AV mode.

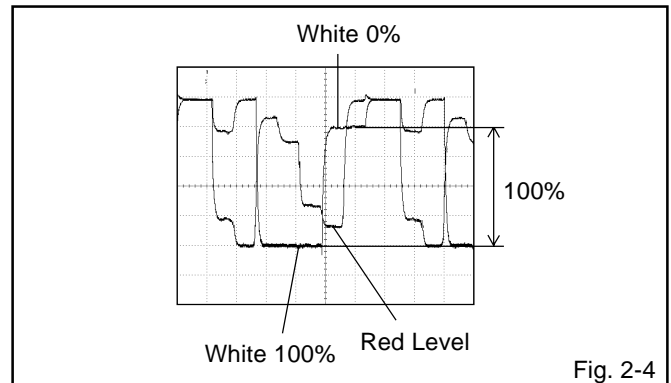


Fig. 2-4

## 2-14: SUB CONTRAST MAX

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(21)** on the remote control to select "CONT MAX".
2. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "60".
3. Receive a broadcast and check if the picture is normal.
4. Press the INPUT SELECT button on the remote control to set to the AV mode. Then perform the above adjustments 1~3.
5. Receive a broadcast and check if the picture is normal. Press the DVD button on the remote control to set to the DVD mode.
6. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(21)** on the remote control to select "CONT MAX".
7. Press the VOL. UP/DOWN button on the remote control to set the same step numbers as the AV mode.

## ELECTRICAL ADJUSTMENTS

### 2-15: Confirmation of Fixed Value (step No.)

Please check if the fixed values of the each adjustment items are set correctly referring below.

NO.	FUNCTION	RF	AV	DVD
01	OSD C	03	03	03
04	H.BLK L	02	02	02
05	H.BLK R	02	02	02
09	VS.CORR	07	07	07
10	V.COMP	03	03	03
15	G.DRV	07	07	07
18	BRI MAX	100	100	100
19	BRI MIN	25	25	25
20	CONT CENT	30	30	30
22	CONT MIN	10	10	10
24	COL MAX	127	127	127
25	COL MIN	00	00	00
27	SHARP	30	30	15
28	SUB BIAS	20	20	20
29	H.SIZE	00	00	00
30	PARABORA	00	00	00
31	TRAPEZIUM	00	00	00
32	COR TOP	00	00	00
33	COR BTM	00	00	00
34	H.COMP	00	00	00
35	T.STE	00	00	00
38	H.FREQ	63	63	63

# ELECTRICAL ADJUSTMENTS

## 3. PURITY AND CONVERGENCE ADJUSTMENTS

### NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

### 3-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 3-1)**  
If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

### 3-2: PURITY

### NOTE

Adjust after performing adjustments in section 3-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.  
Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue colors.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

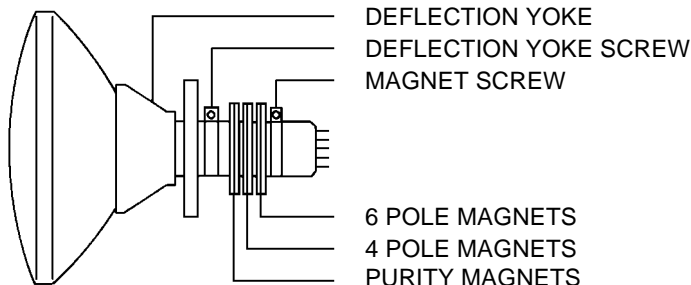


Fig. 3-1

### 3-3: STATIC CONVERGENCE

### NOTE

Adjust after performing adjustments in section 3-2.

1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

### 3-4: DYNAMIC CONVERGENCE

### NOTE

Adjust after performing adjustments in section 3-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 3-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 3-2-b)**

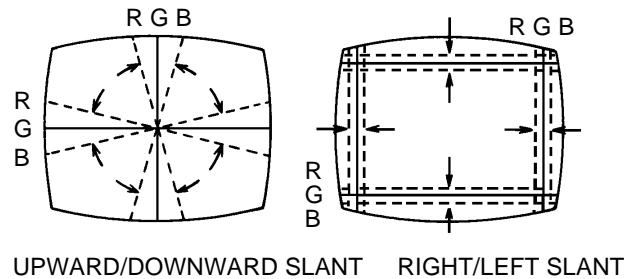


Fig. 3-2-a

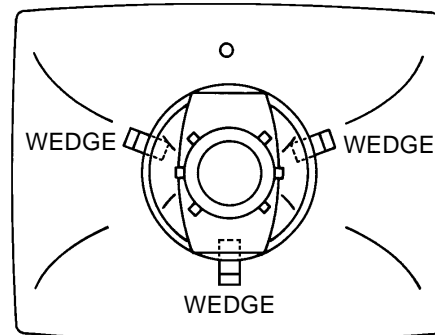
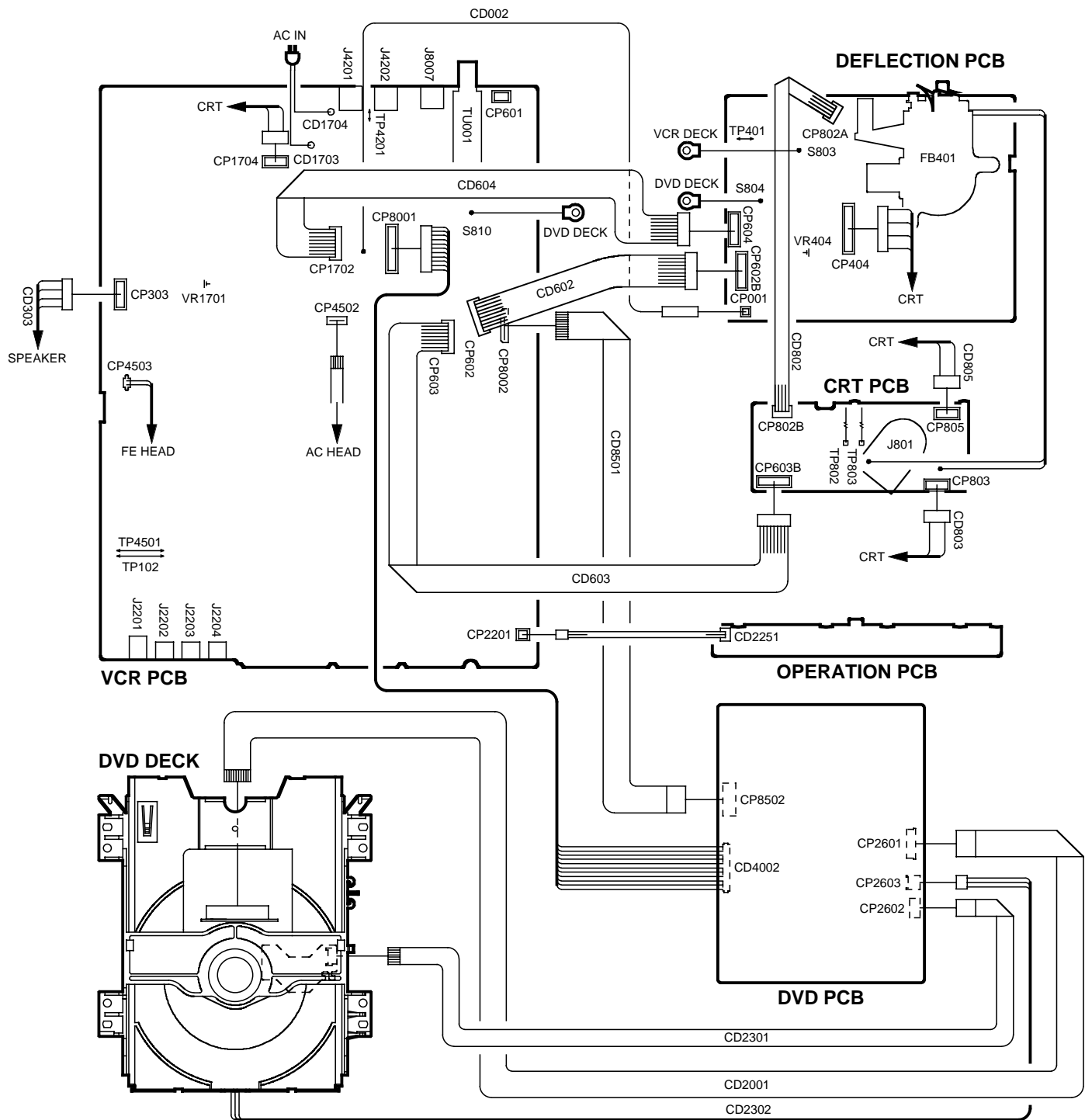


Fig. 3-2-b



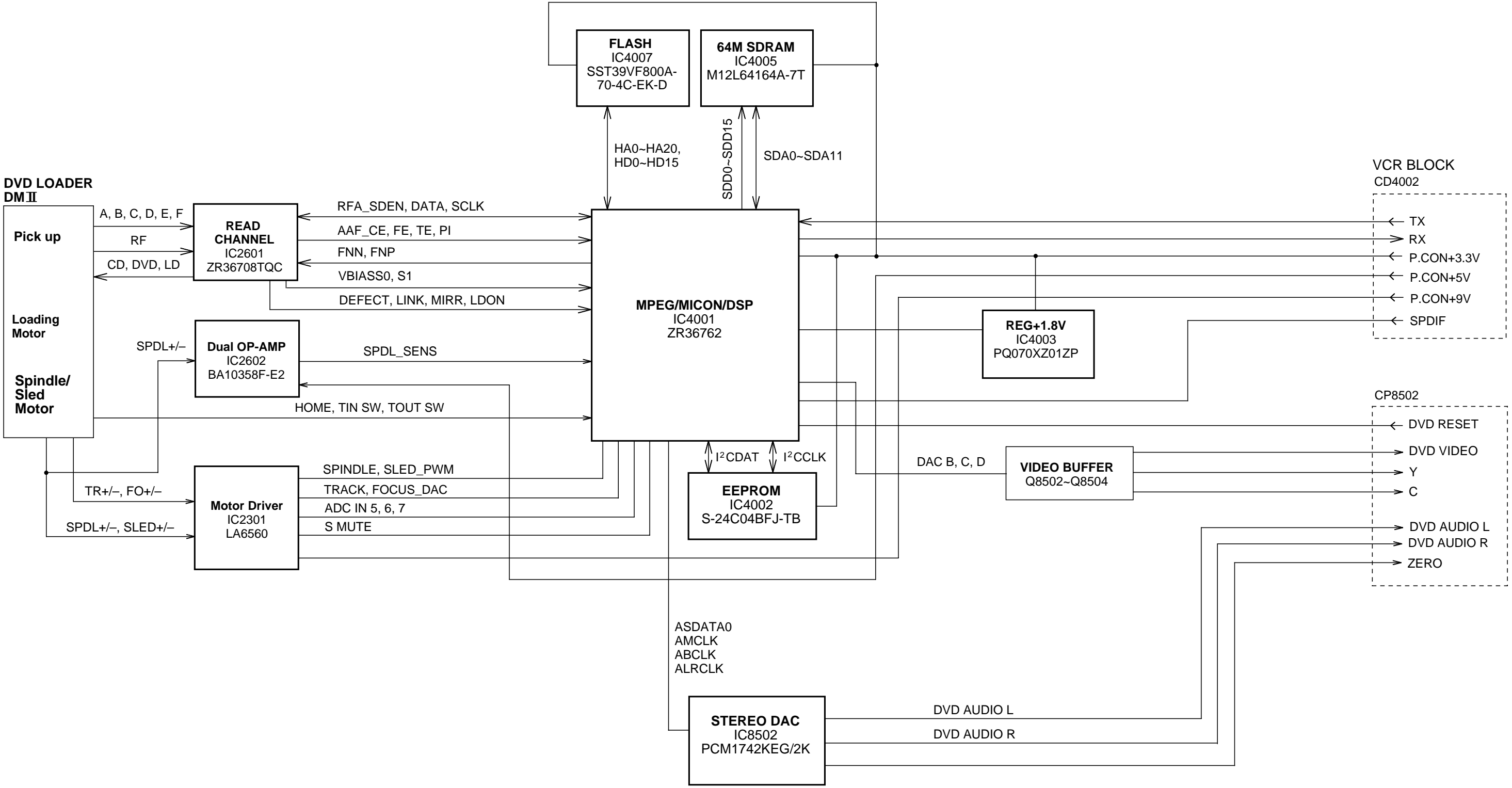
# ELECTRICAL ADJUSTMENTS

## 2. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)

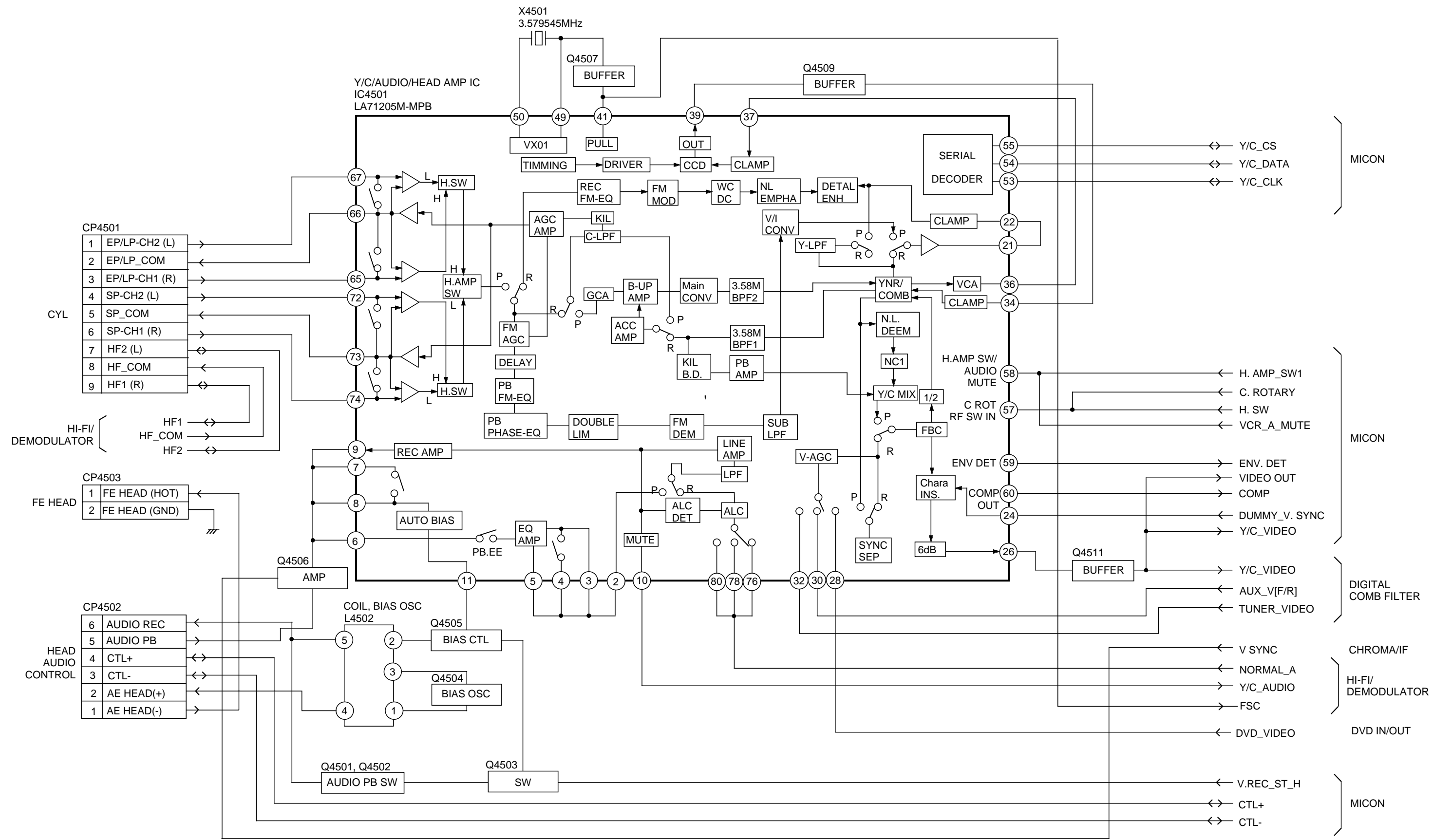


DVD BLOCK DIAGRAM

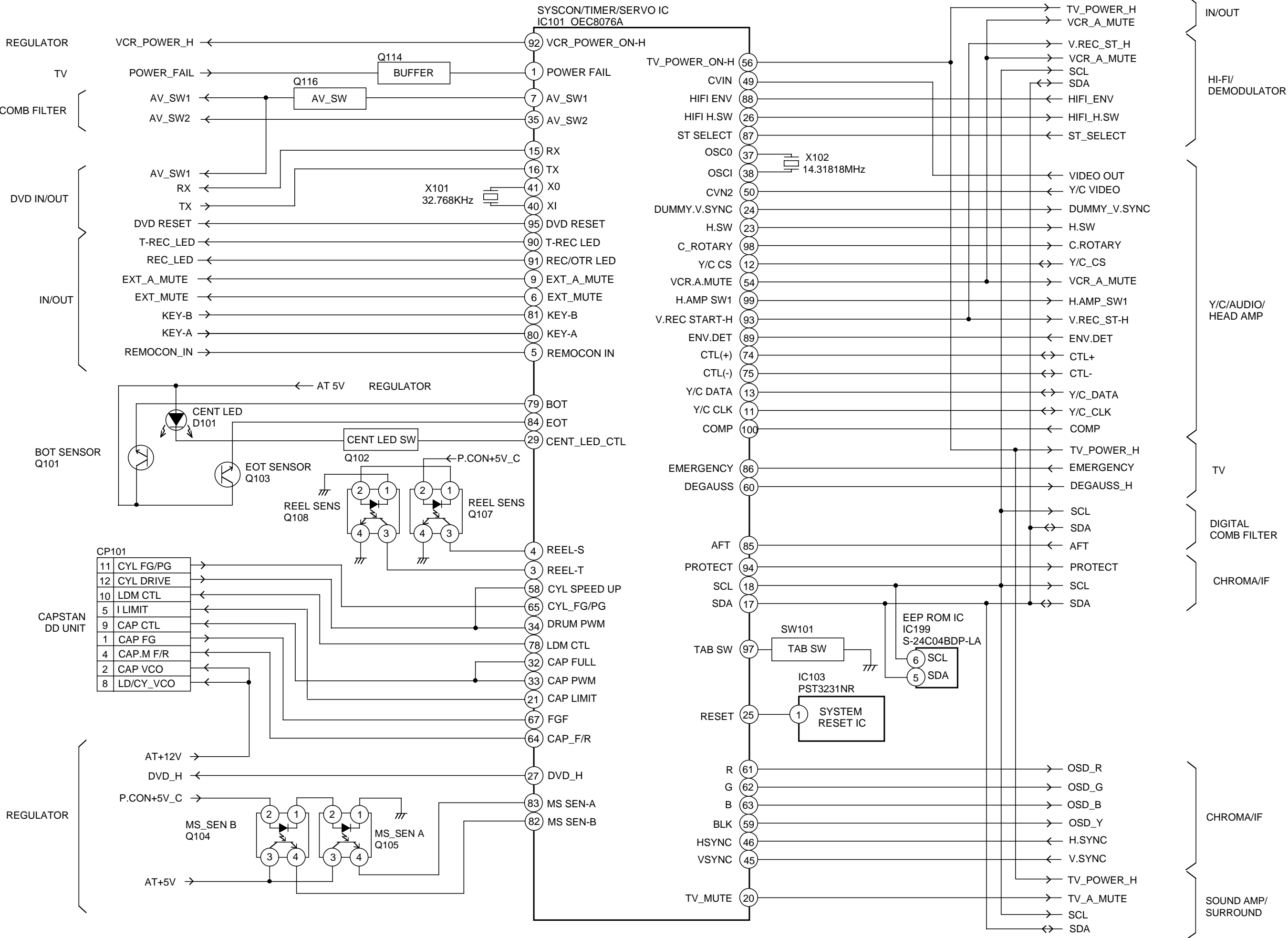
DVD LOADER  
DM II



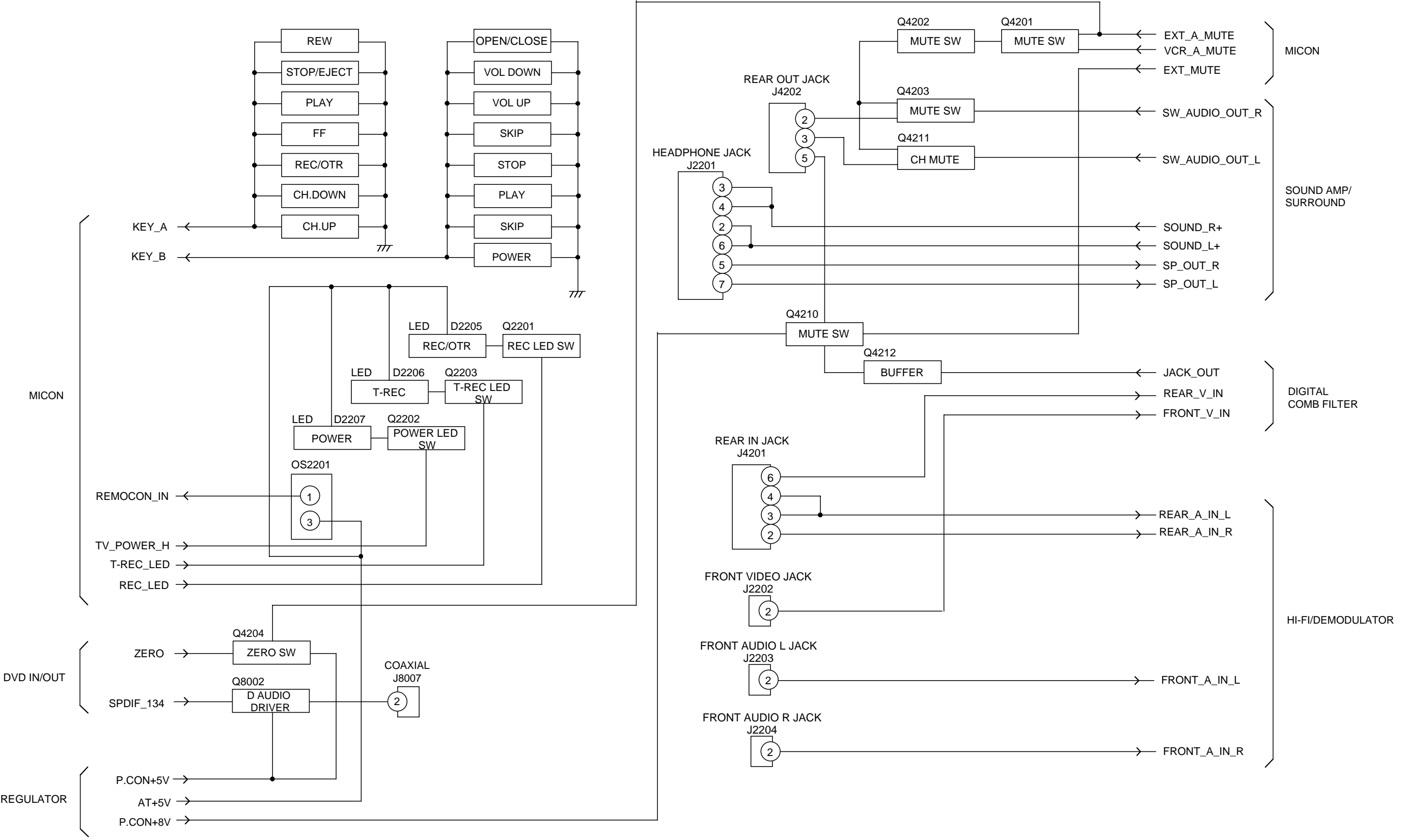
Y/C/AUDIO/HEAD AMP BLOCK DIAGRAM



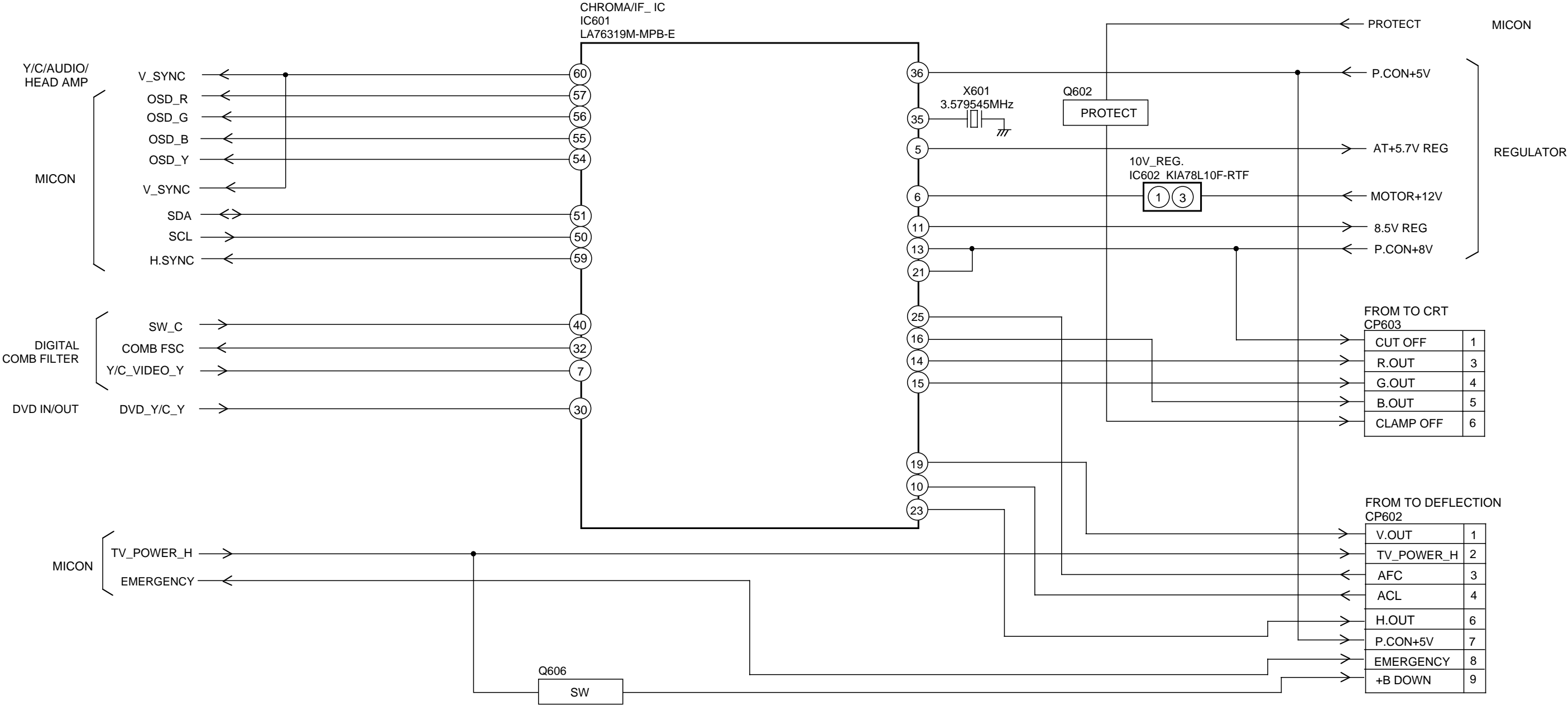
MICON BLOCK DIAGRAM



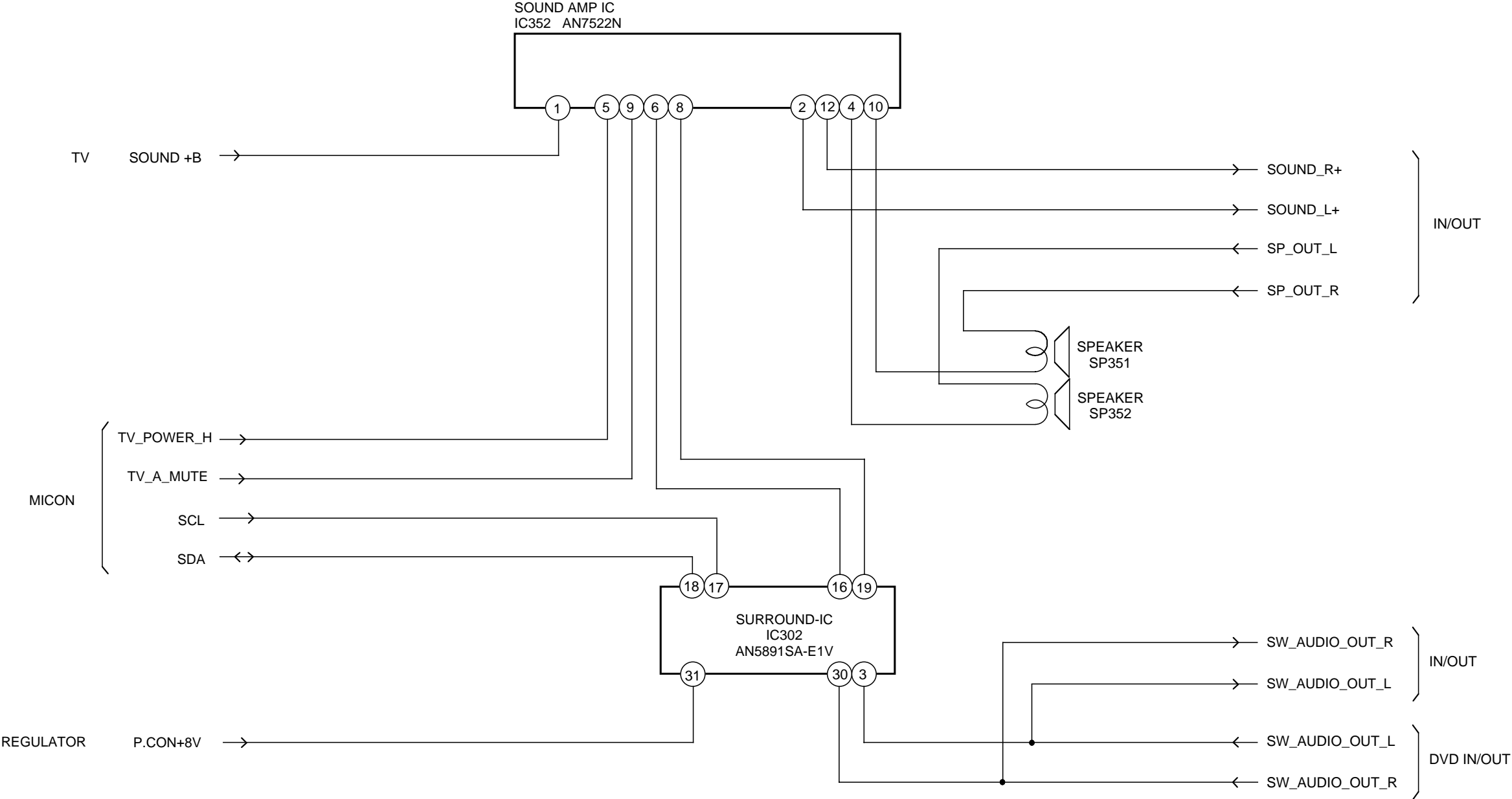
IN/OUT BLOCK DIAGRAM



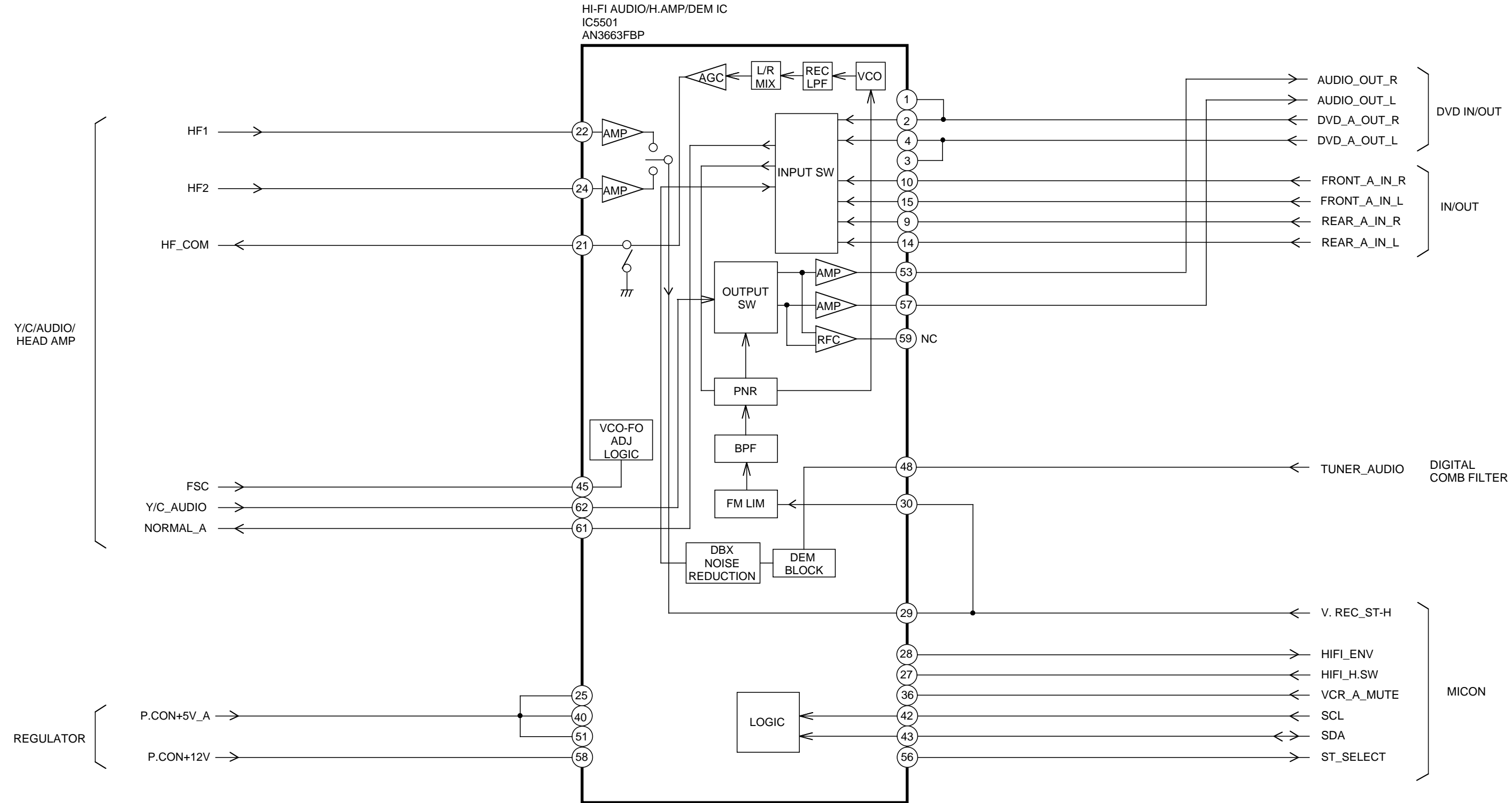
CHROMA/IF BLOCK DIAGRAM



SOUND AMP/SURROUND BLOCK DIAGRAM

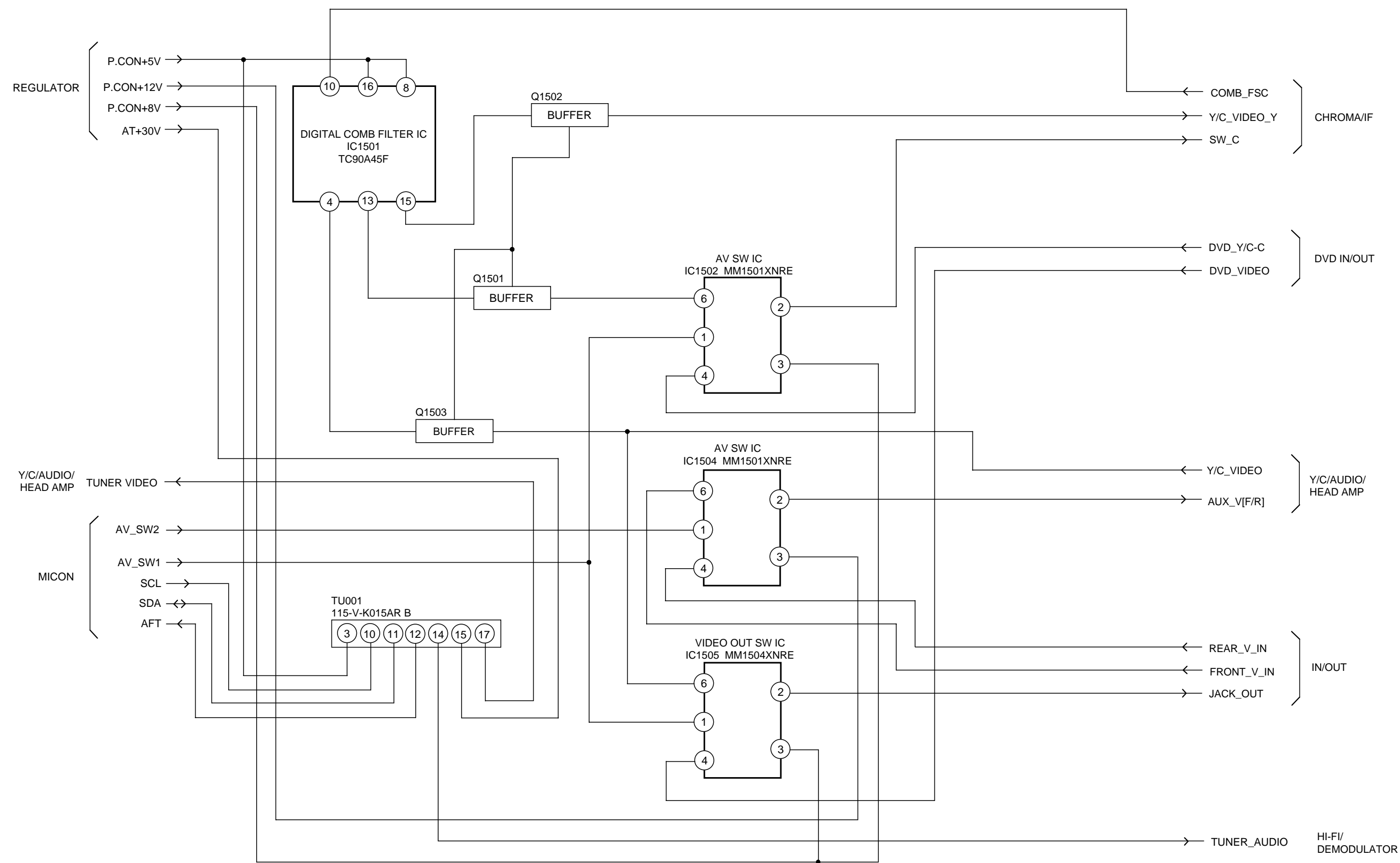


Hi-Fi/DEMODULATOR BLOCK DIAGRAM

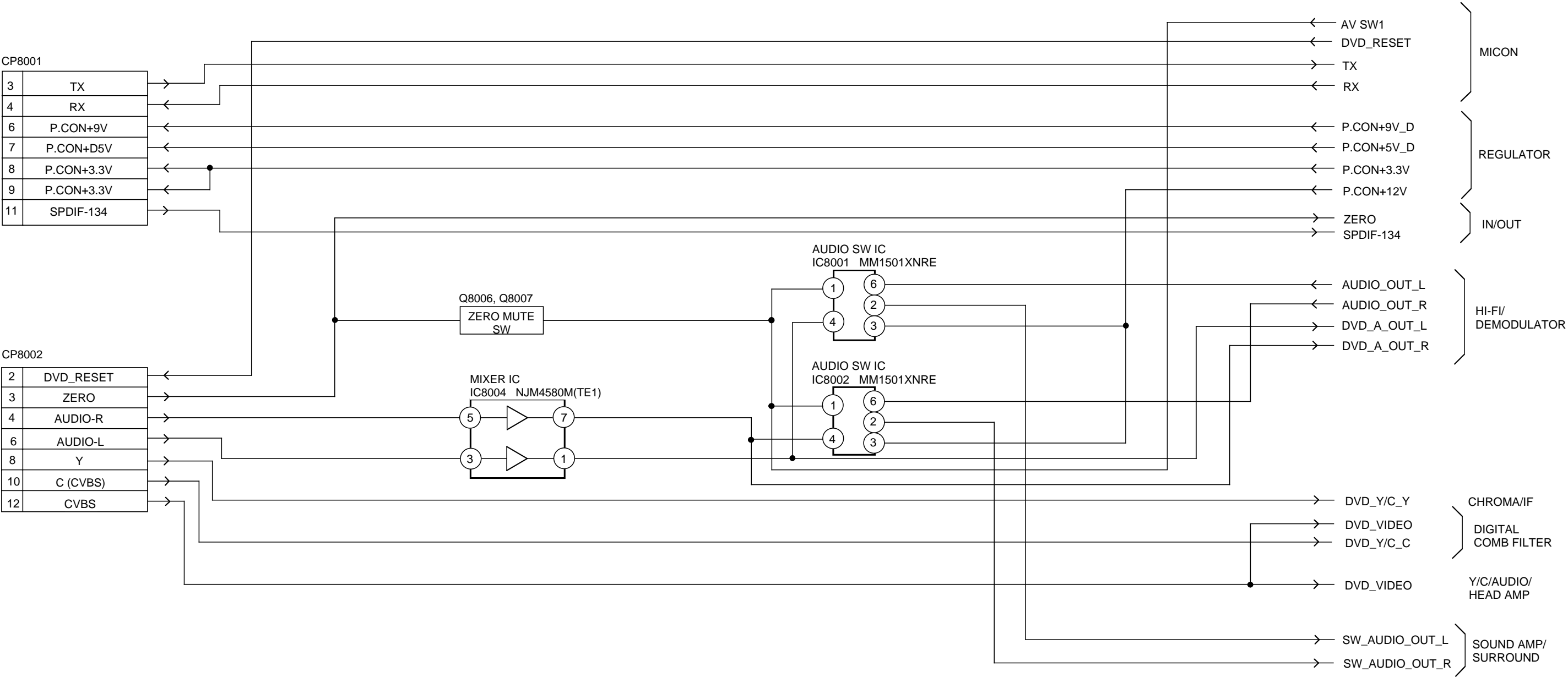




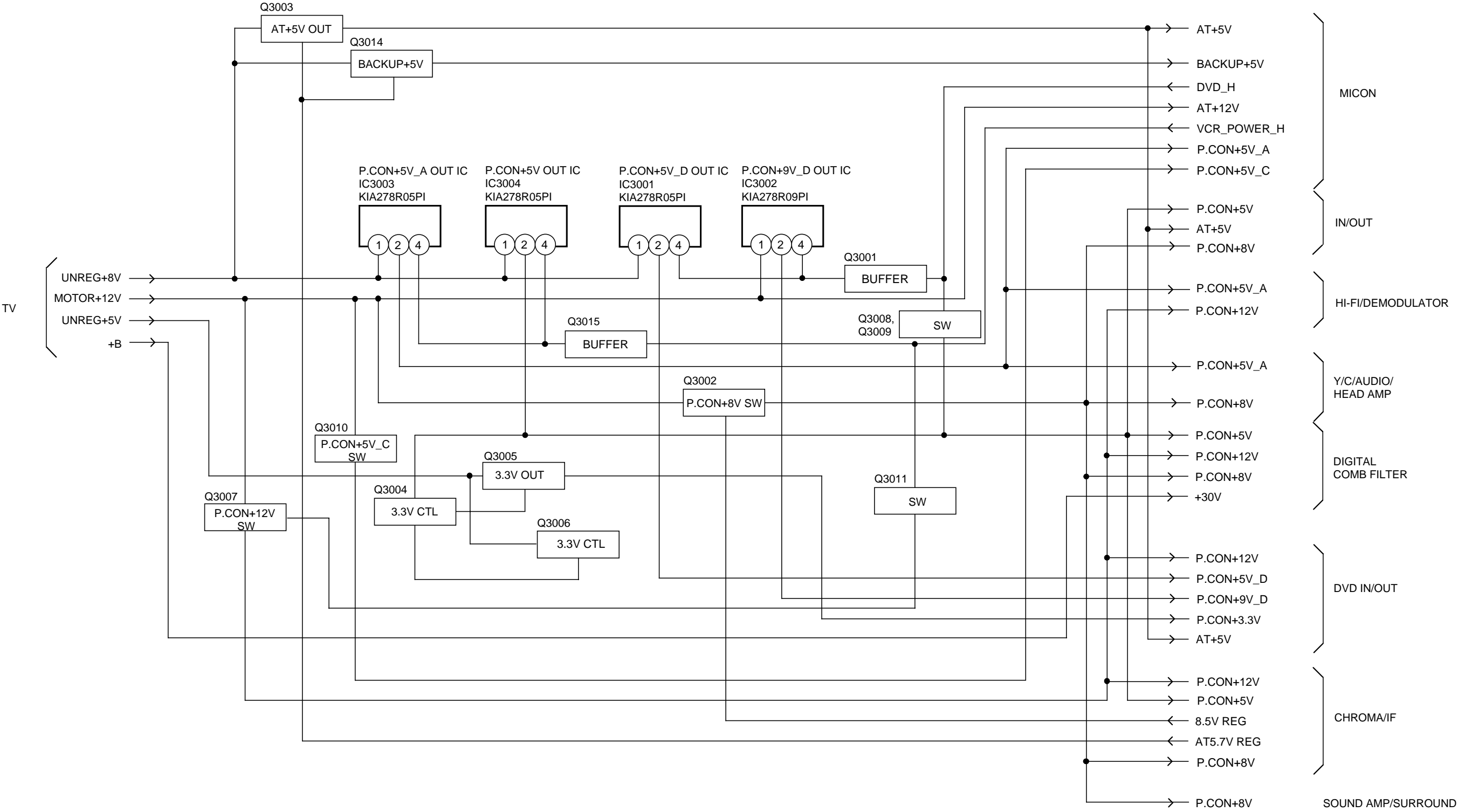
DIGITAL COMB FILTER BLOCK DIAGRAM



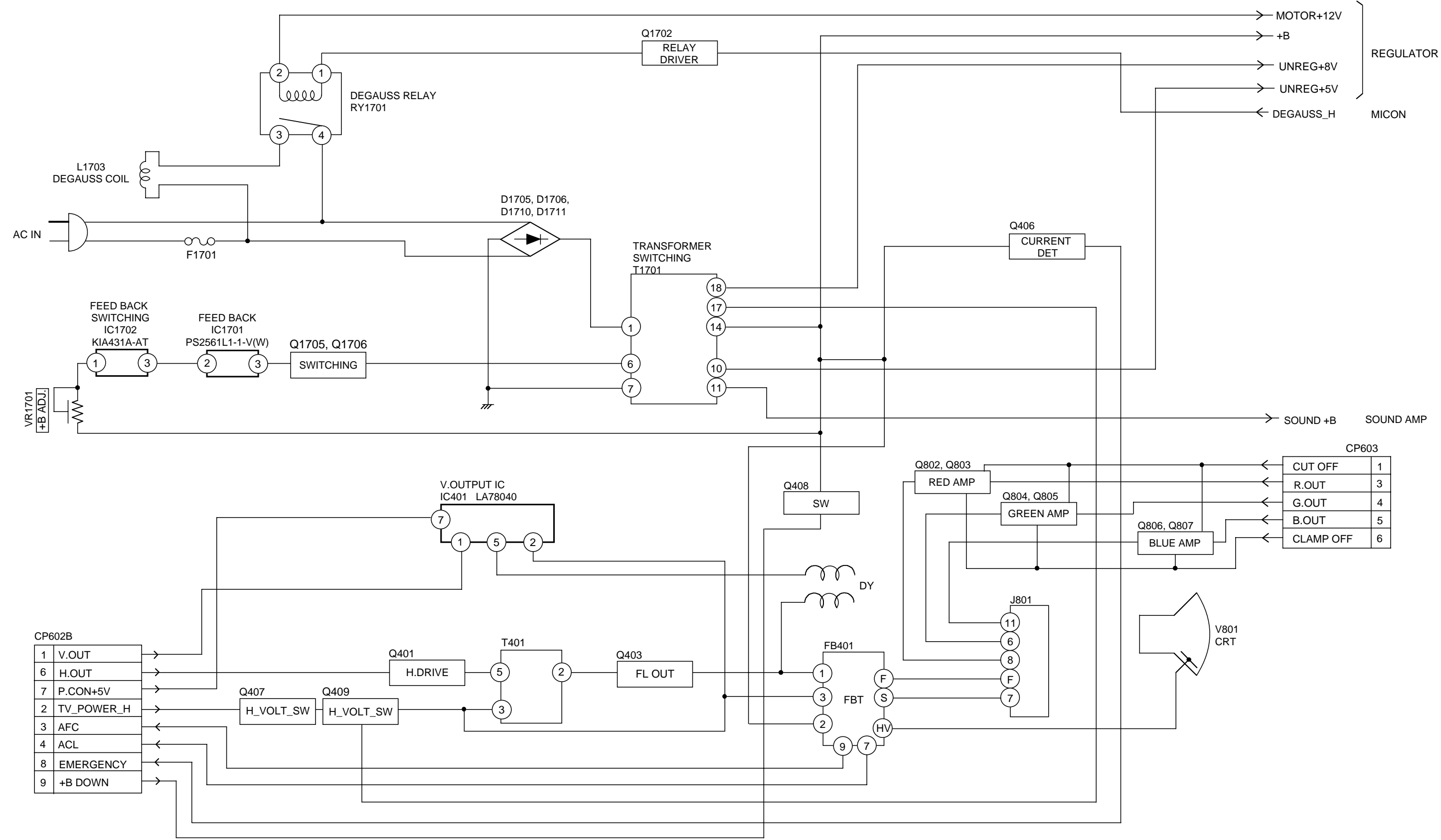
DVD IN/OUT BLOCK DIAGRAM



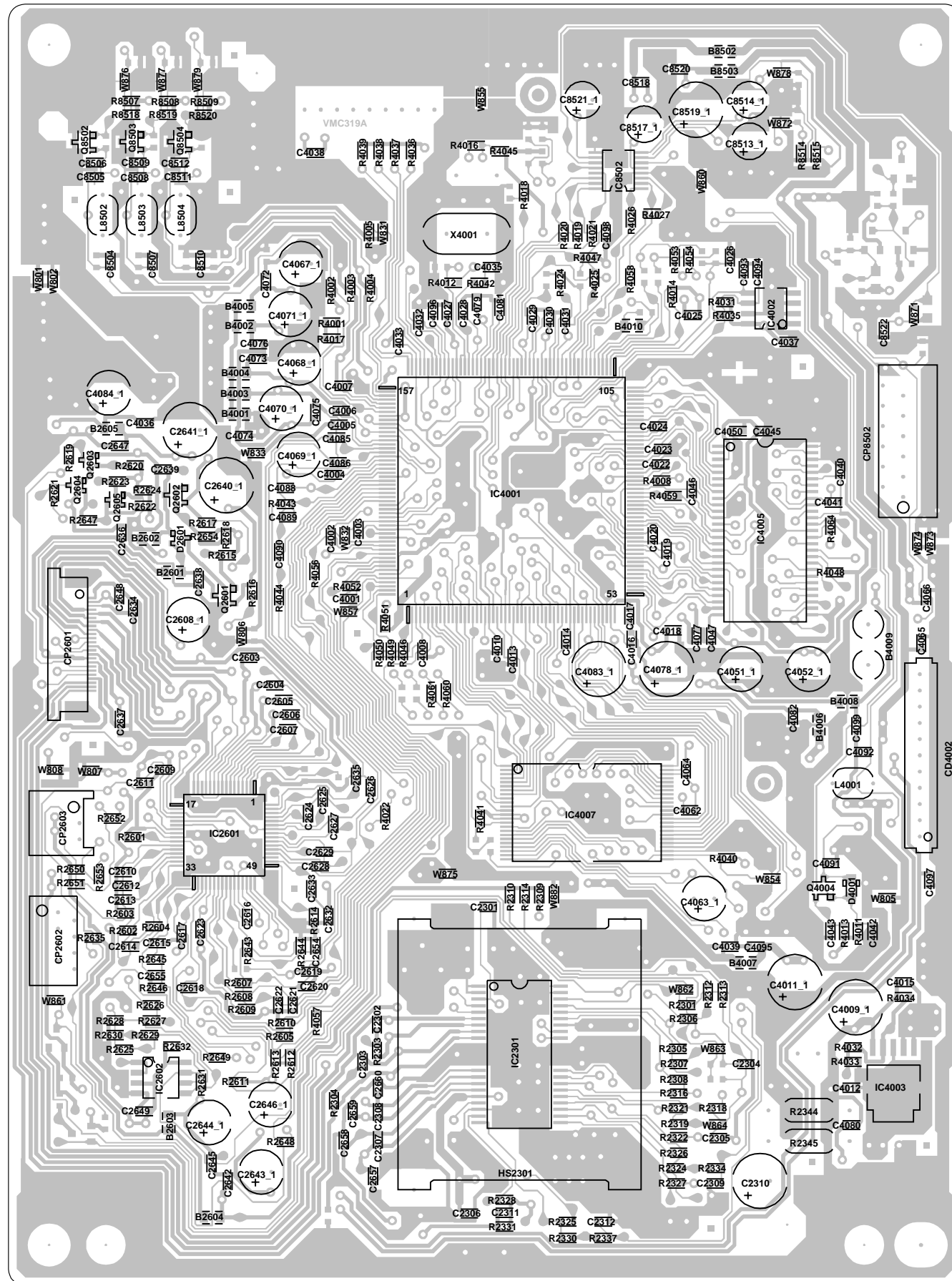
REGULATOR BLOCK DIAGRAM



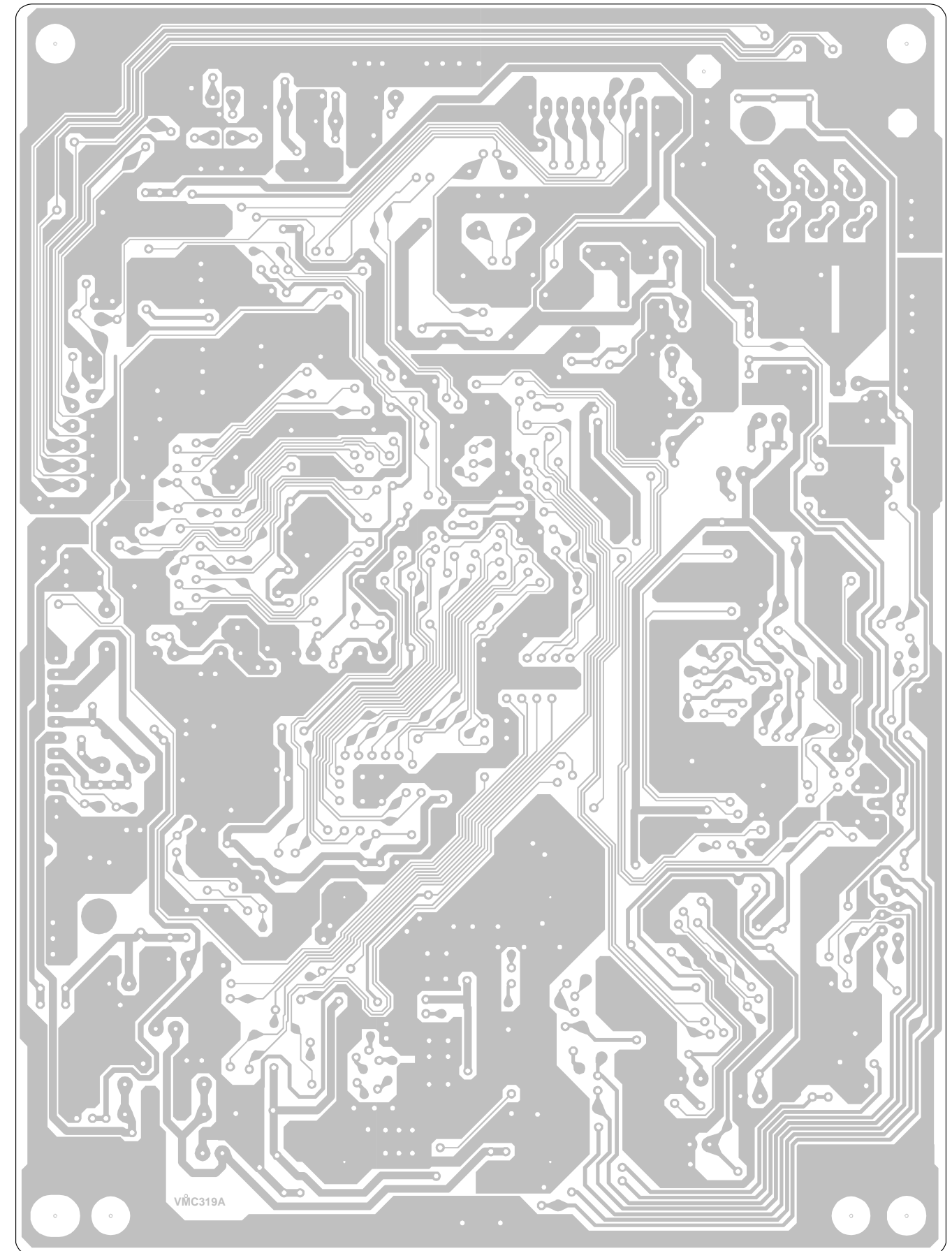
TV BLOCK DIAGRAM



**DVD (TOP SIDE)**



### DVD (BOTTOM SIDE)

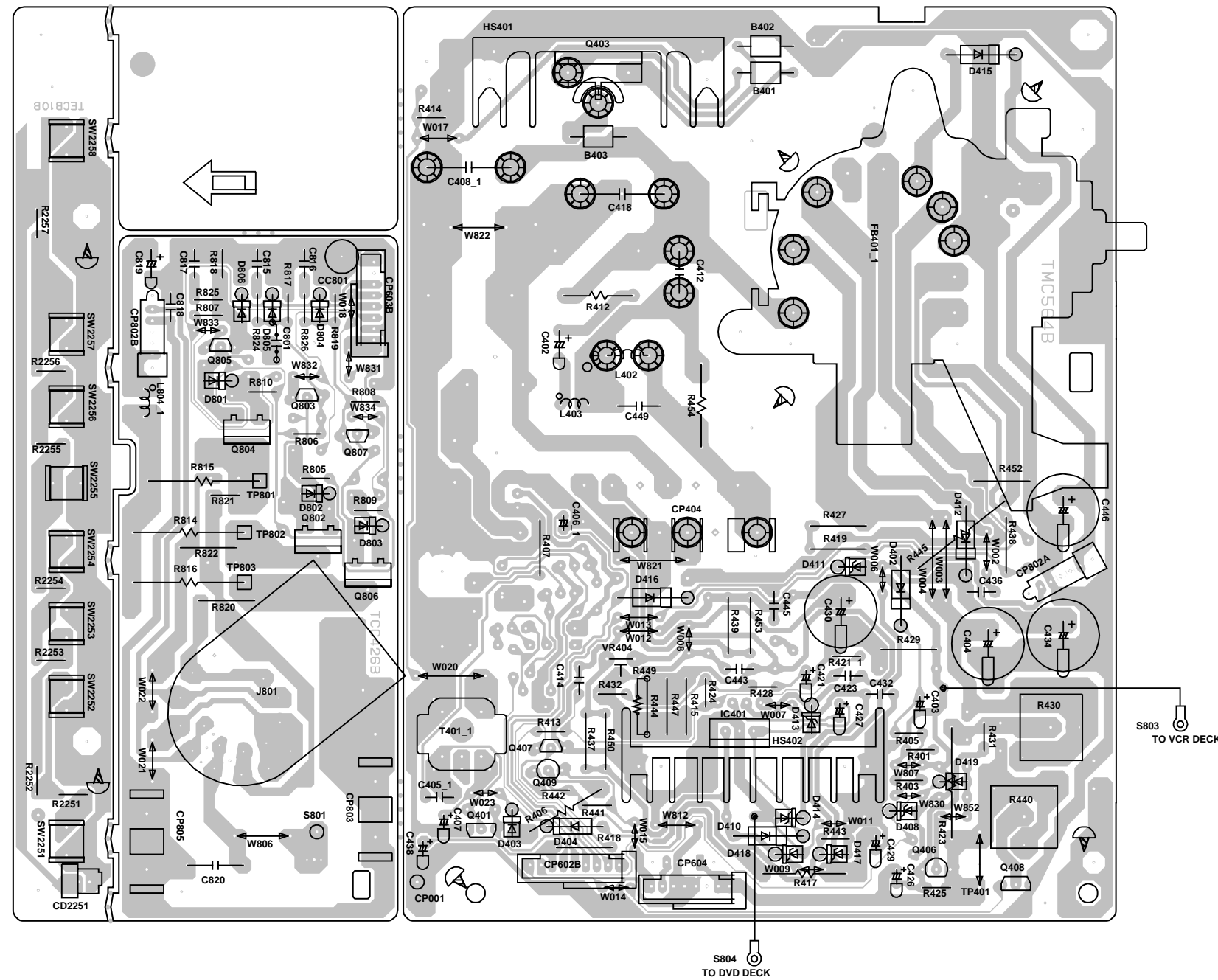




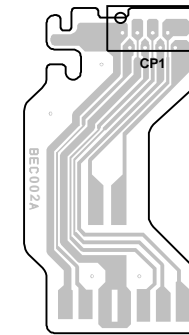


## PRINTED CIRCUIT BOARDS

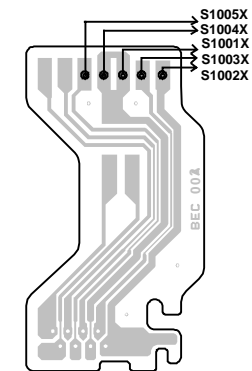
## DEFLECTION/CRT/OPERATION



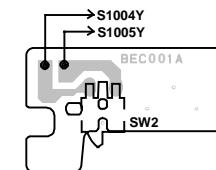
**RELAY (INSERTED PARS)**  
**SOLDER SIDE**



**RELAY (CHIP MOUNTED PARS)  
SOLDER SIDE**



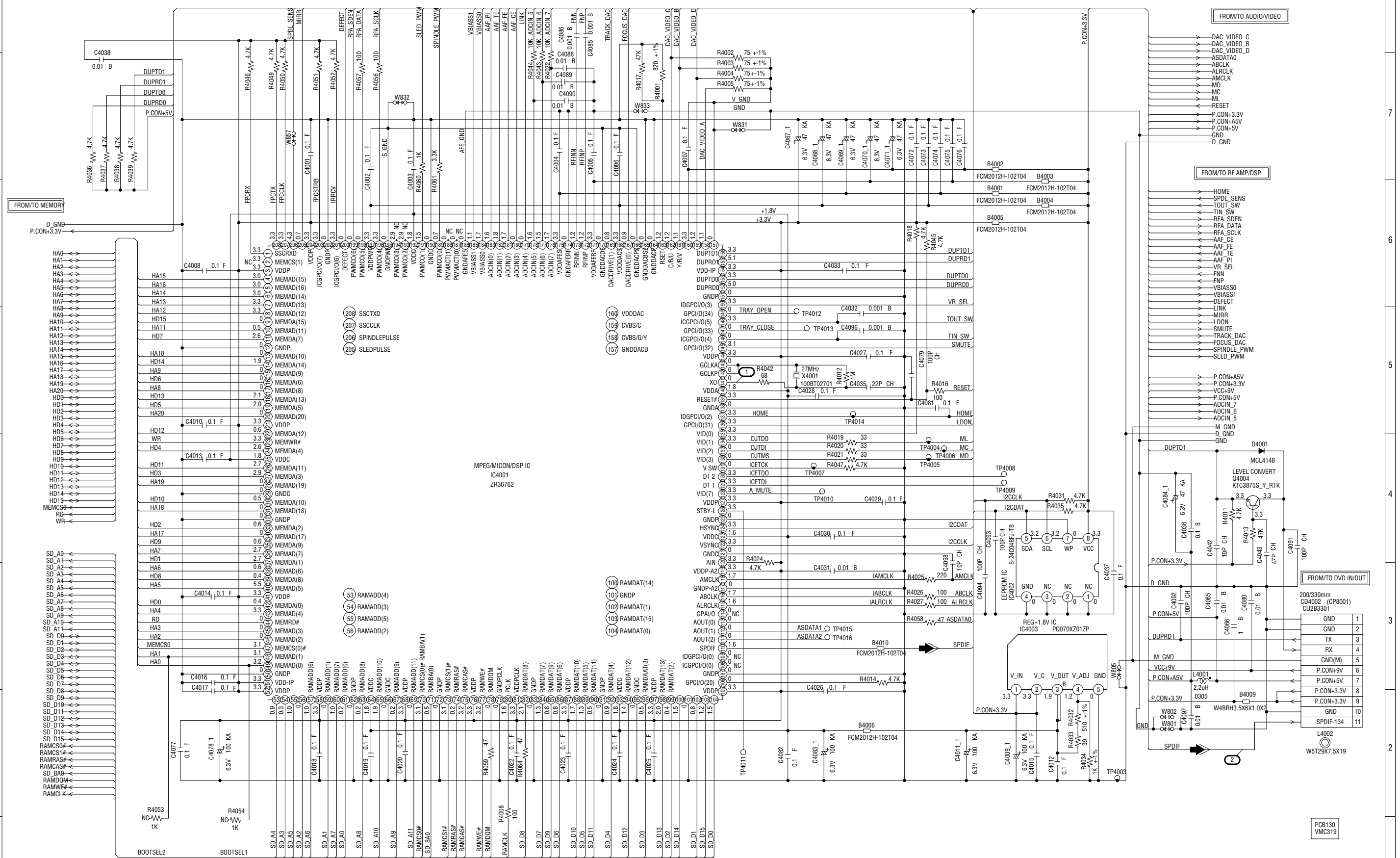
**SW**  
**SOLDER SIDE**





# MPEG/MICON SCHEMATIC DIAGRAM

## (DVD PCB)



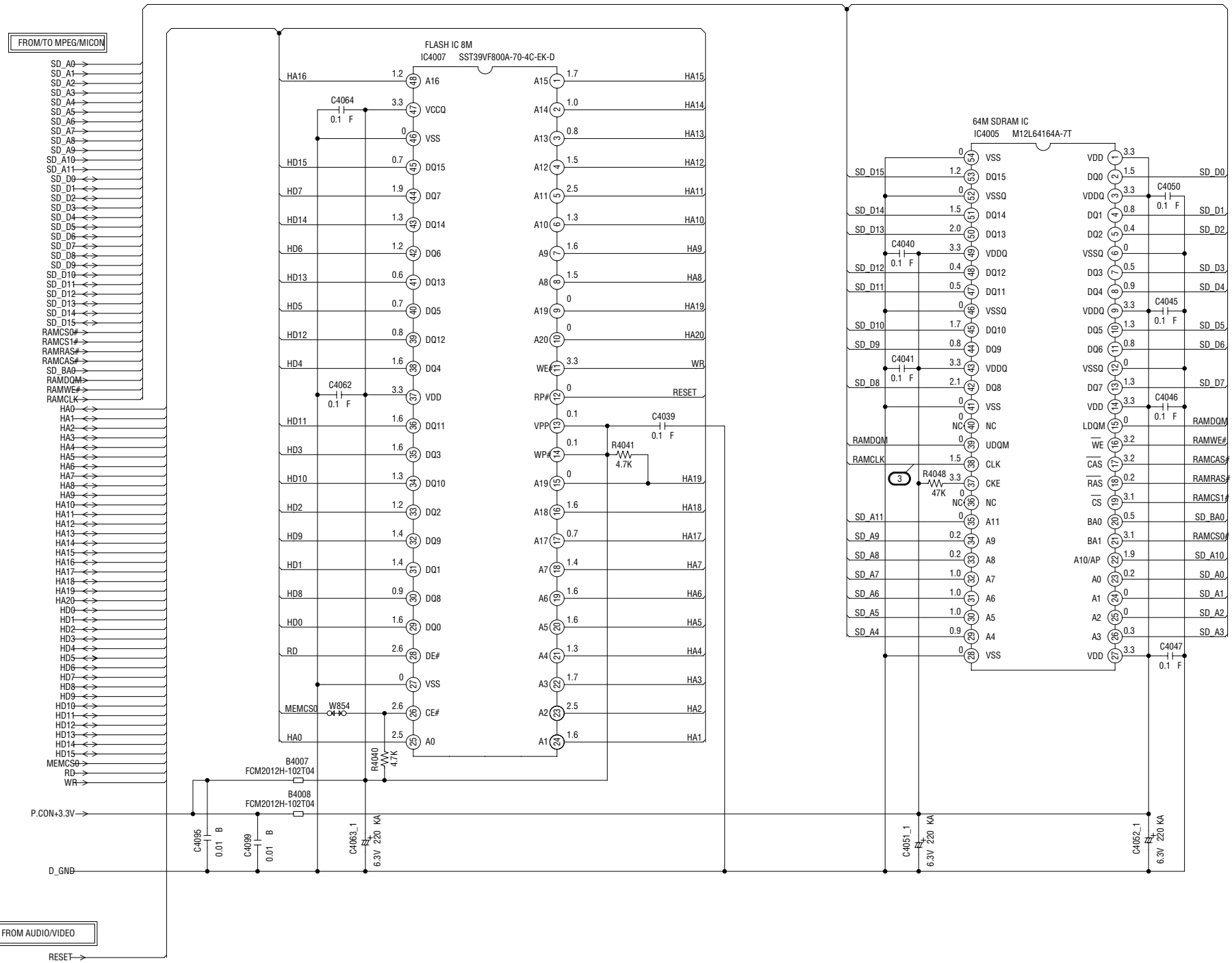
NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

DIGITAL AUDIO SIGNAL (PB)

PCB130 VMC319

MEMORY SCHEMATIC DIAGRAM  
(DVD PCB)

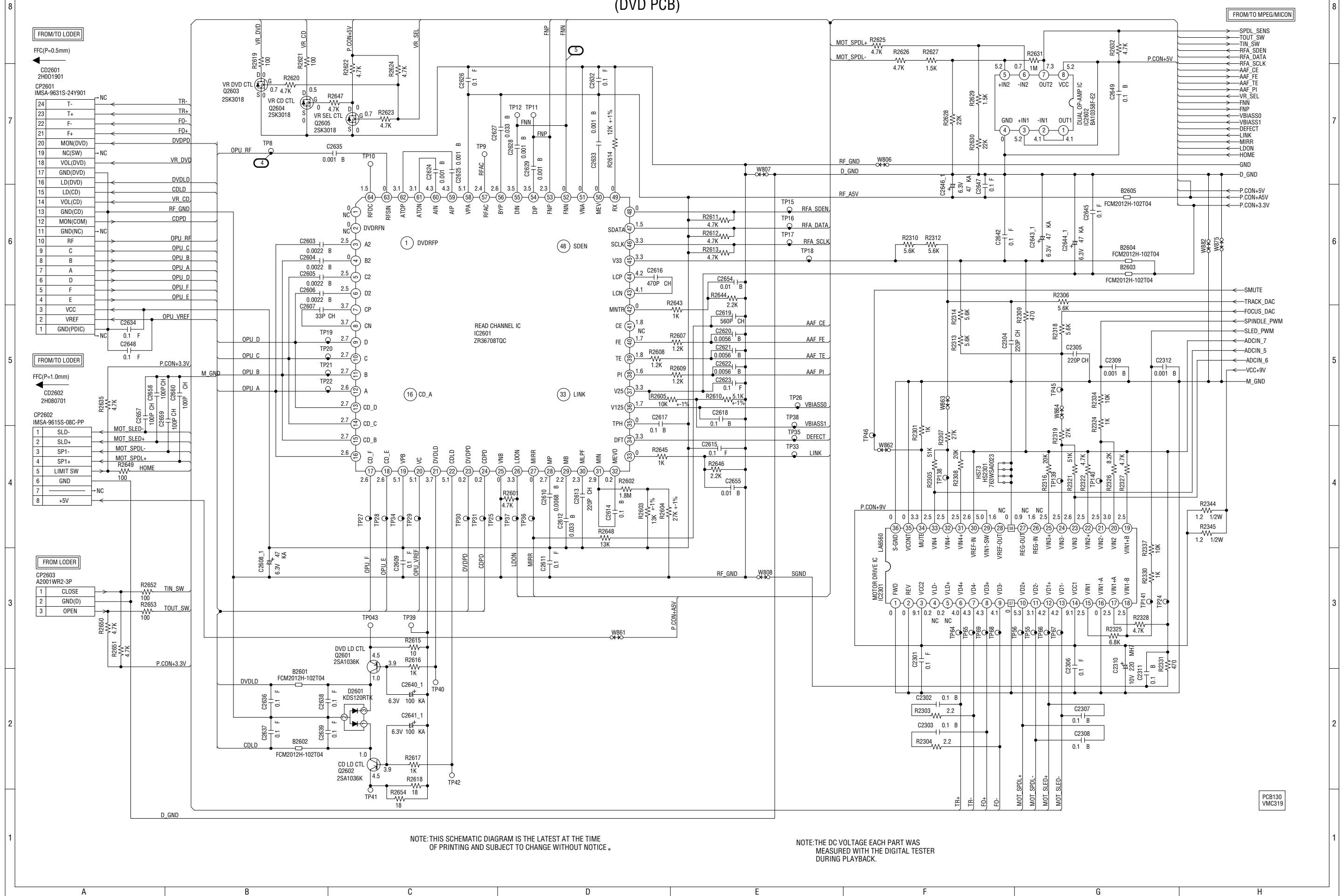


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME  
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

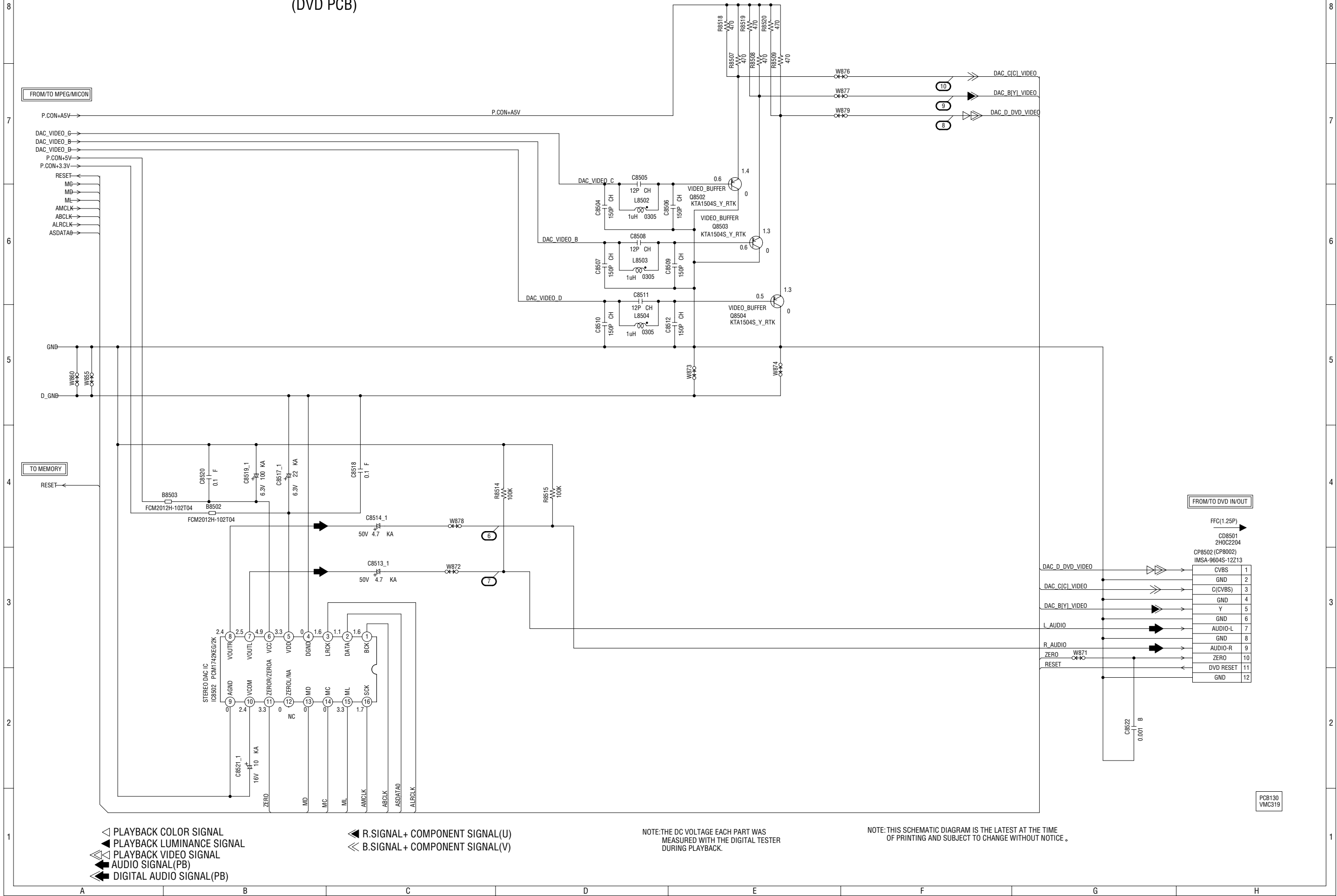
NOTE: THE DC VOLTAGE EACH PART WAS  
MEASURED WITH THE DIGITAL TESTER  
DURING PLAYBACK.

PCB130  
VMC319

(DVD PCB)



AUDIO/VIDEO SCHEMATIC DIAGRAM  
(DVD PCB)



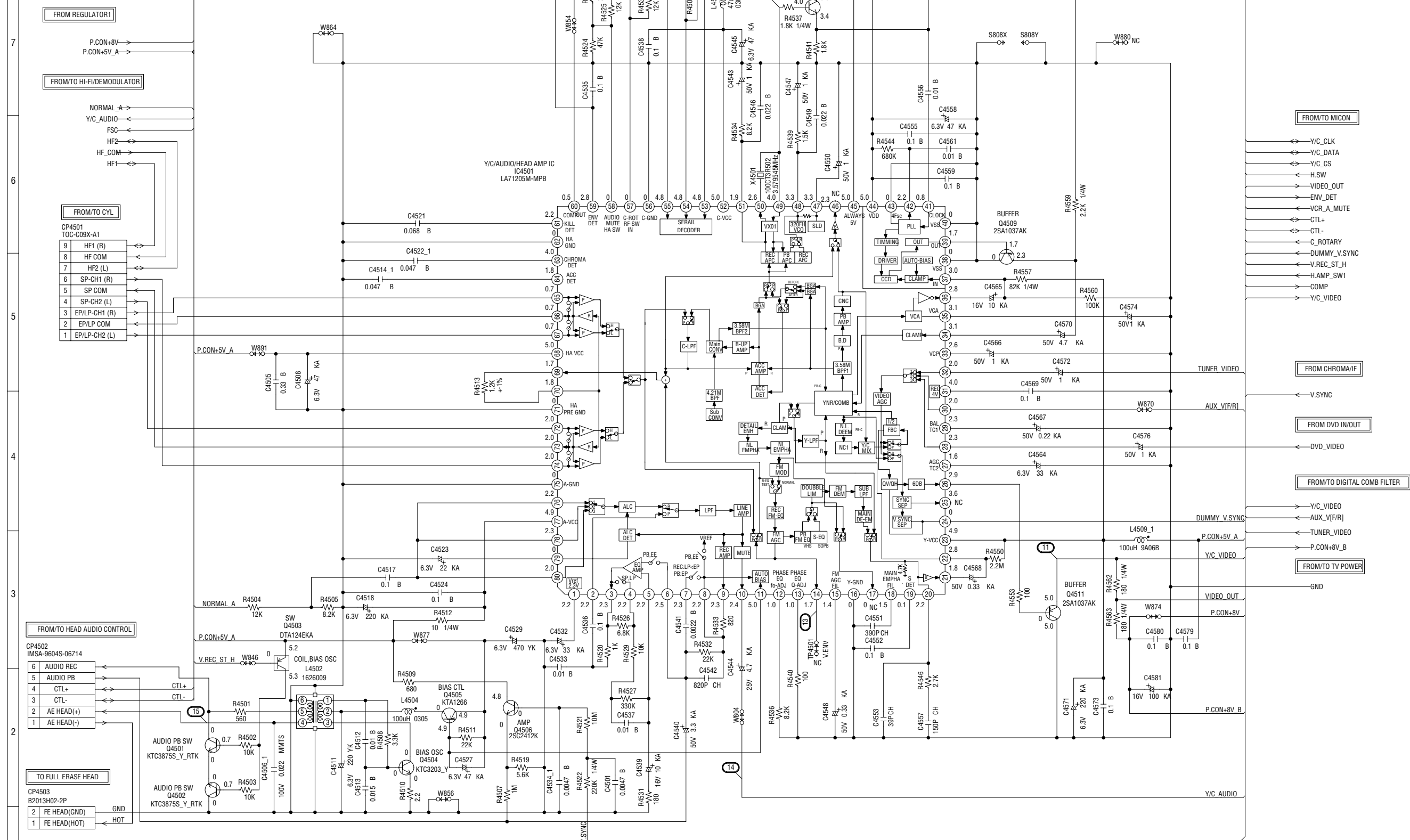
- ▷ PLAYBACK COLOR SIGNAL
- ▶ PLAYBACK LUMINANCE SIGNAL
- ▷▶ PLAYBACK VIDEO SIGNAL
- ▶ AUDIO SIGNAL(PB)
- ▶▶ DIGITAL AUDIO SIGNAL(PB)
- ◀ R.SIGNAL+ COMPONENT SIGNAL(U)
- ◀◀ B.SIGNAL+ COMPONENT SIGNAL(V)

NOTE:THE DC VOLTAGE EACH PART WAS  
MEASURED WITH THE DIGITAL TESTER  
DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME  
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE .

PCB130  
VMC319

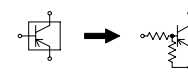
# Y/C/AUDIO/HEAD AMP SCHEMATIC DIAGRAM (VCR PCB)



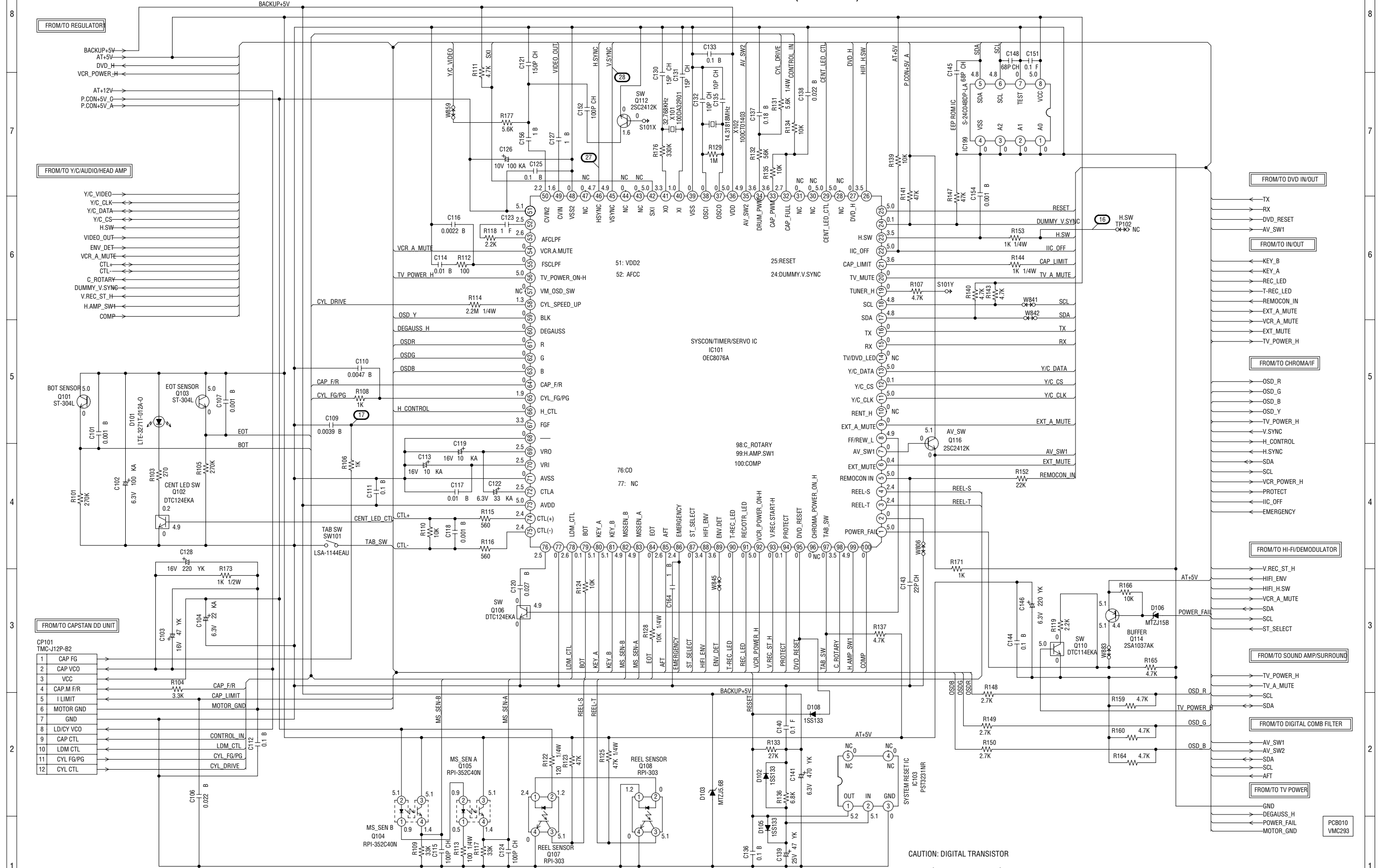
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

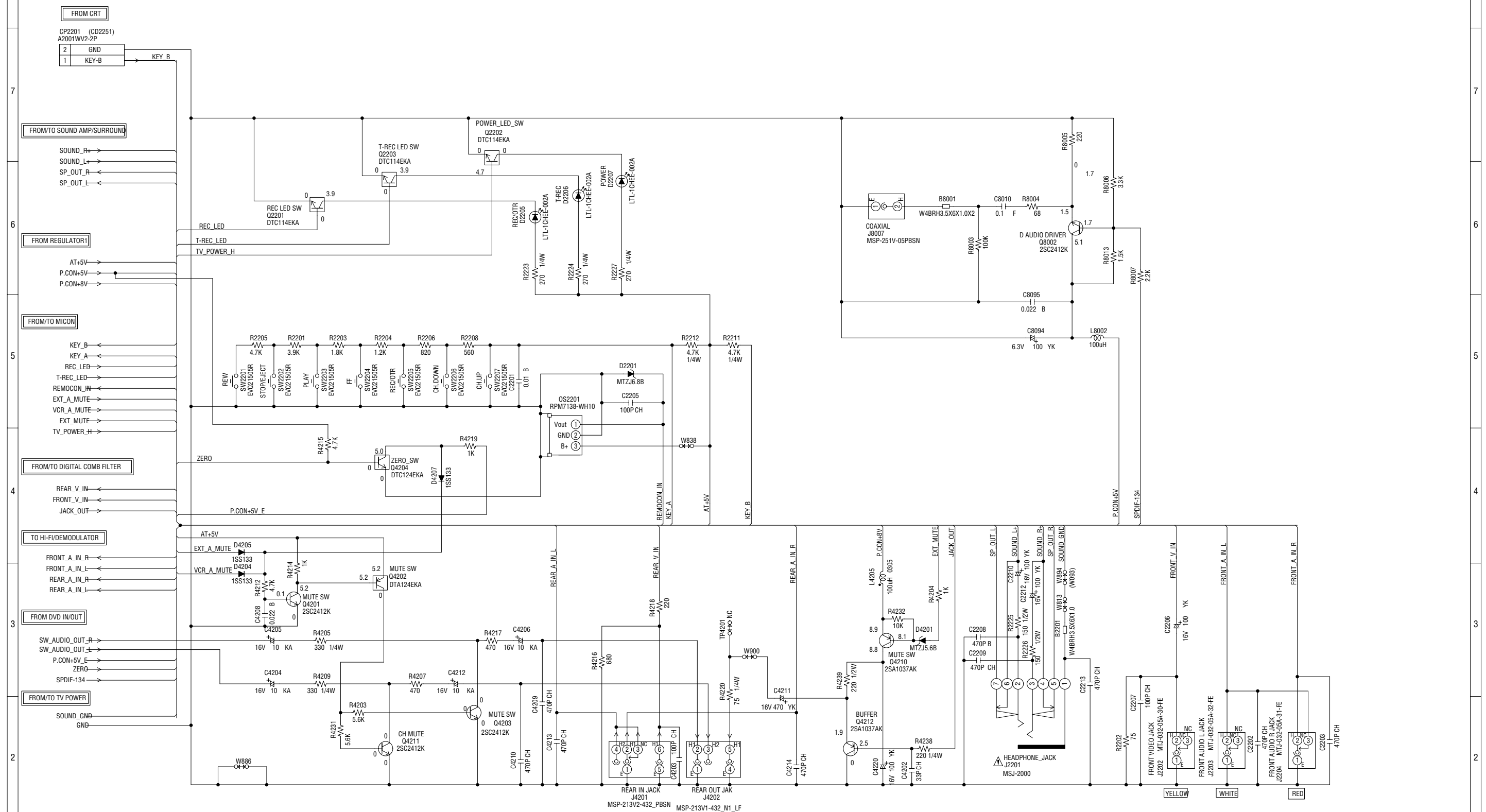
CAUTION: DIGITAL TRANSISTOR



# MICON SCHEMATIC DIAGRAM (VCR PCB)



# IN/OUT SCHEMATIC DIAGRAM (VCR PCB)



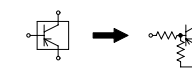
**CAUTION** SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

**ATTENTION** LES PIÈCES REPARÉES PAR UN ÉTANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

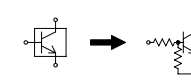
NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: DIGITAL TRANSISTOR

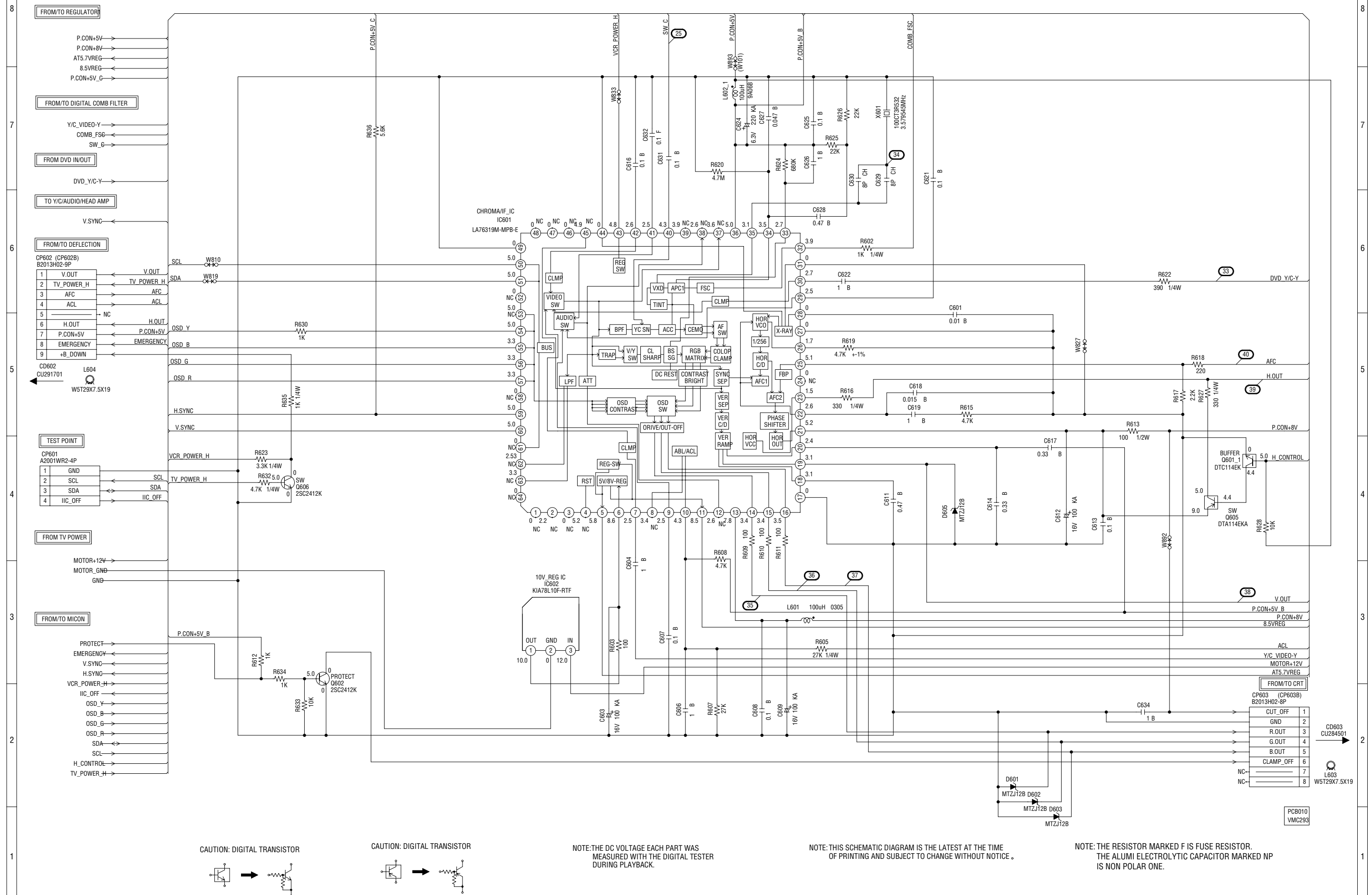


CAUTION: DIGITAL TRANSISTOR



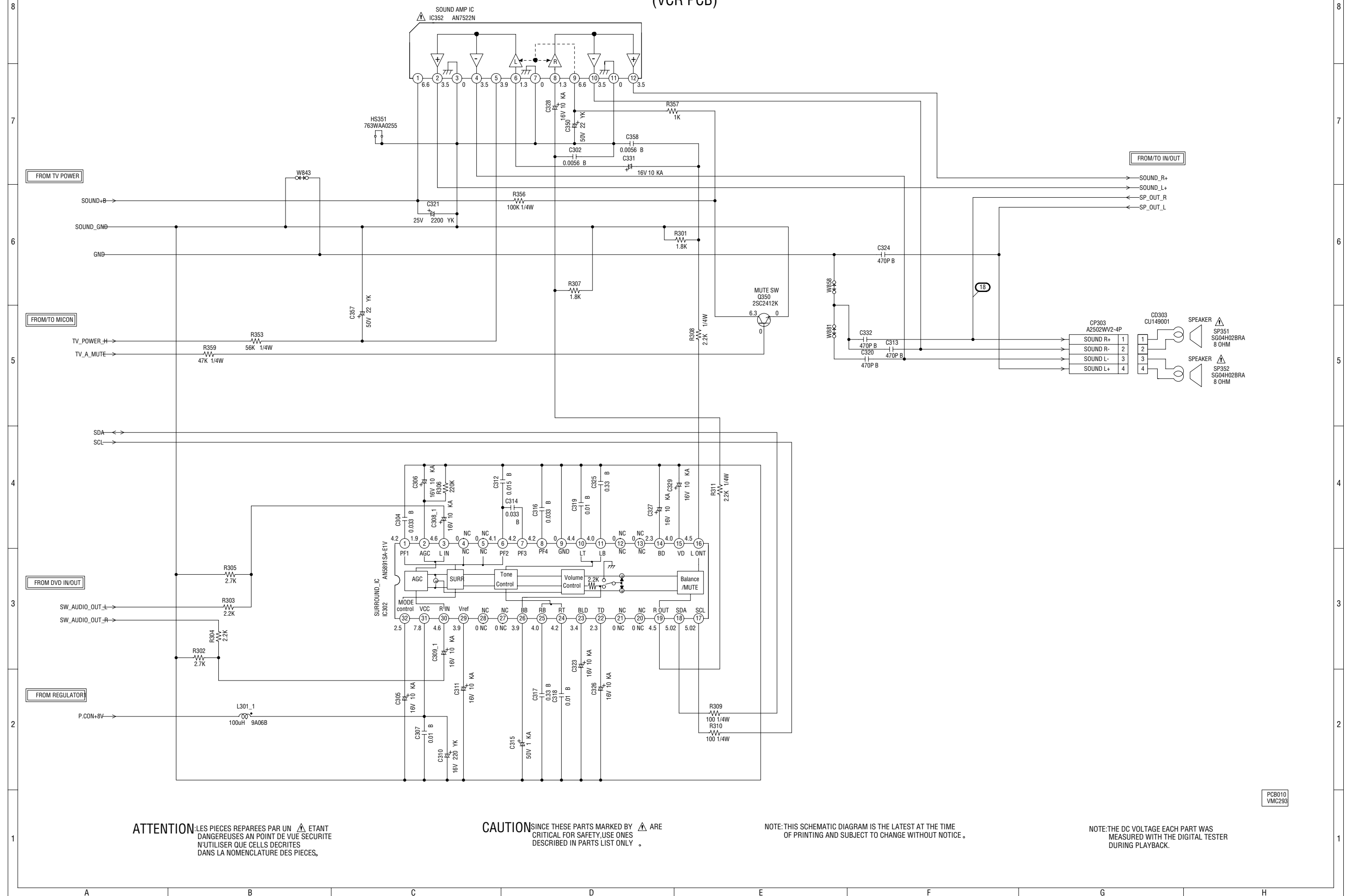
PCB010  
VMC293

# CHROMA/IF SCHEMATIC DIAGRAM (VCR PCB)






(VCR PCB)



**ATTENTION:** LES PIÈCES RÉPARÉES PAR UN  ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

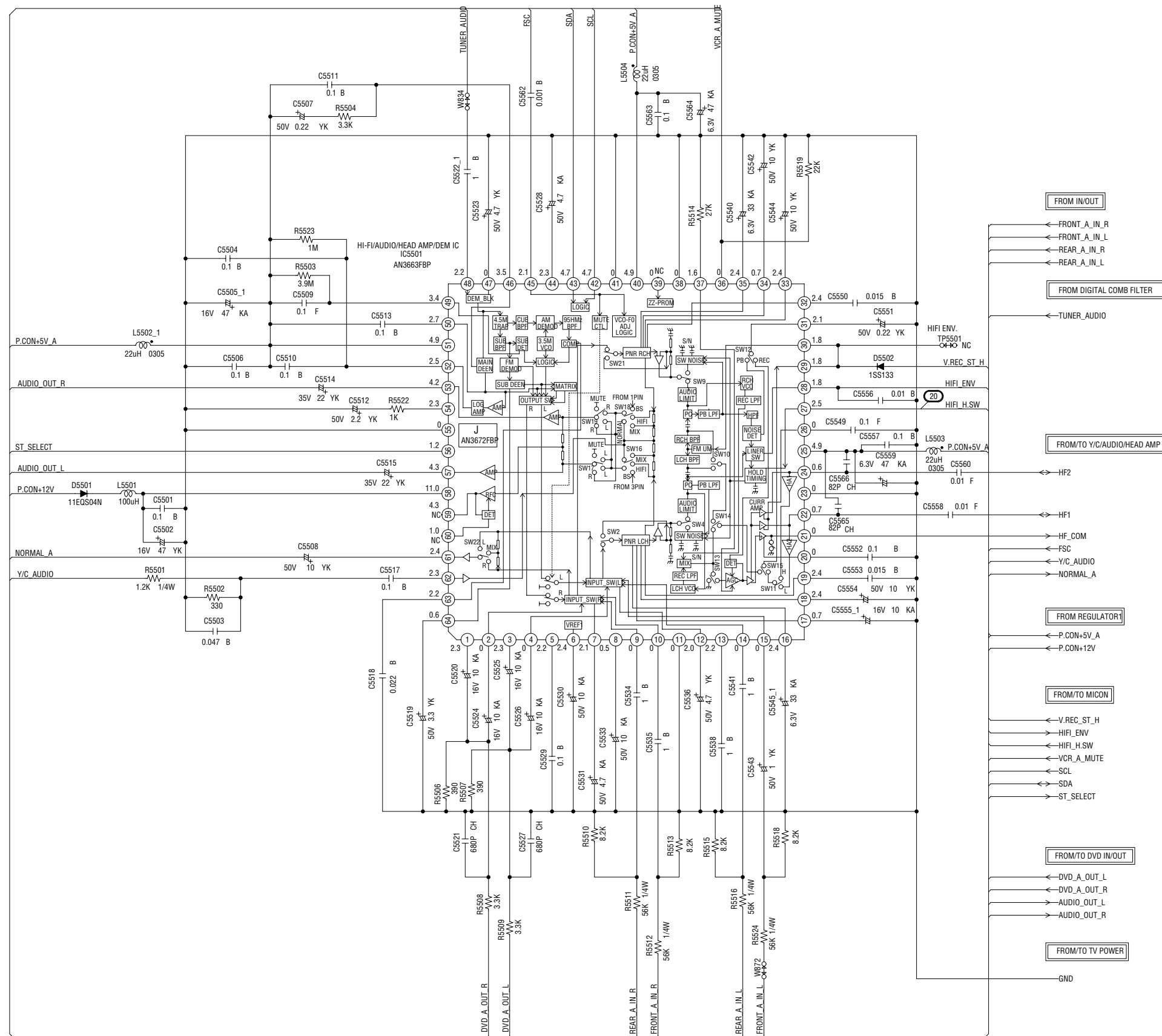
**CAUTION** SINCE THESE PARTS MARKED BY  ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

# Hi-Fi/DEMODULATOR SCHEMATIC DIAGRAM

(VCR PCB)

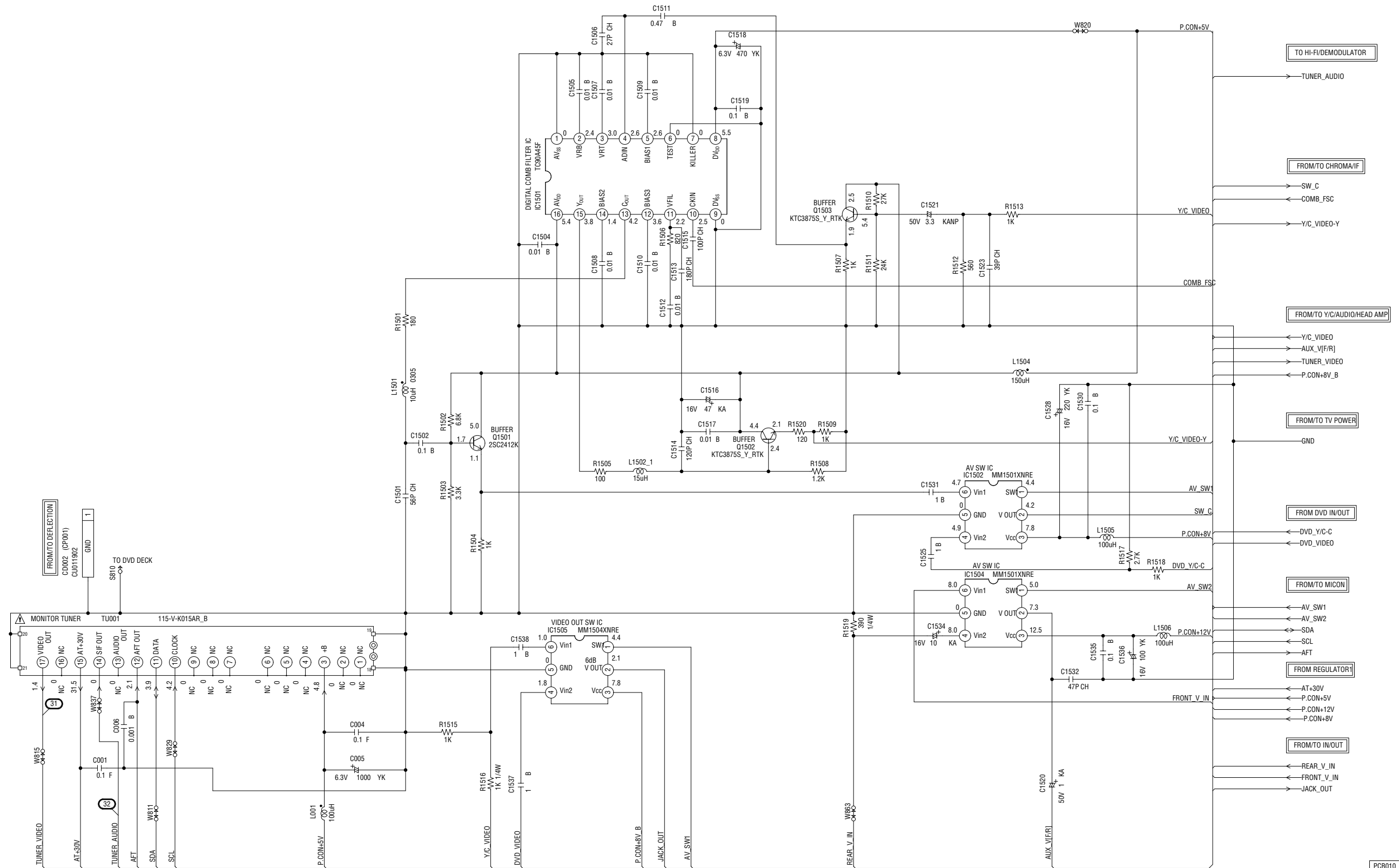



NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.


NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

PCB010  
VMC293

## DIGITAL COMB FILTER SCHEMATIC DIAGRAM (VCR PCB)



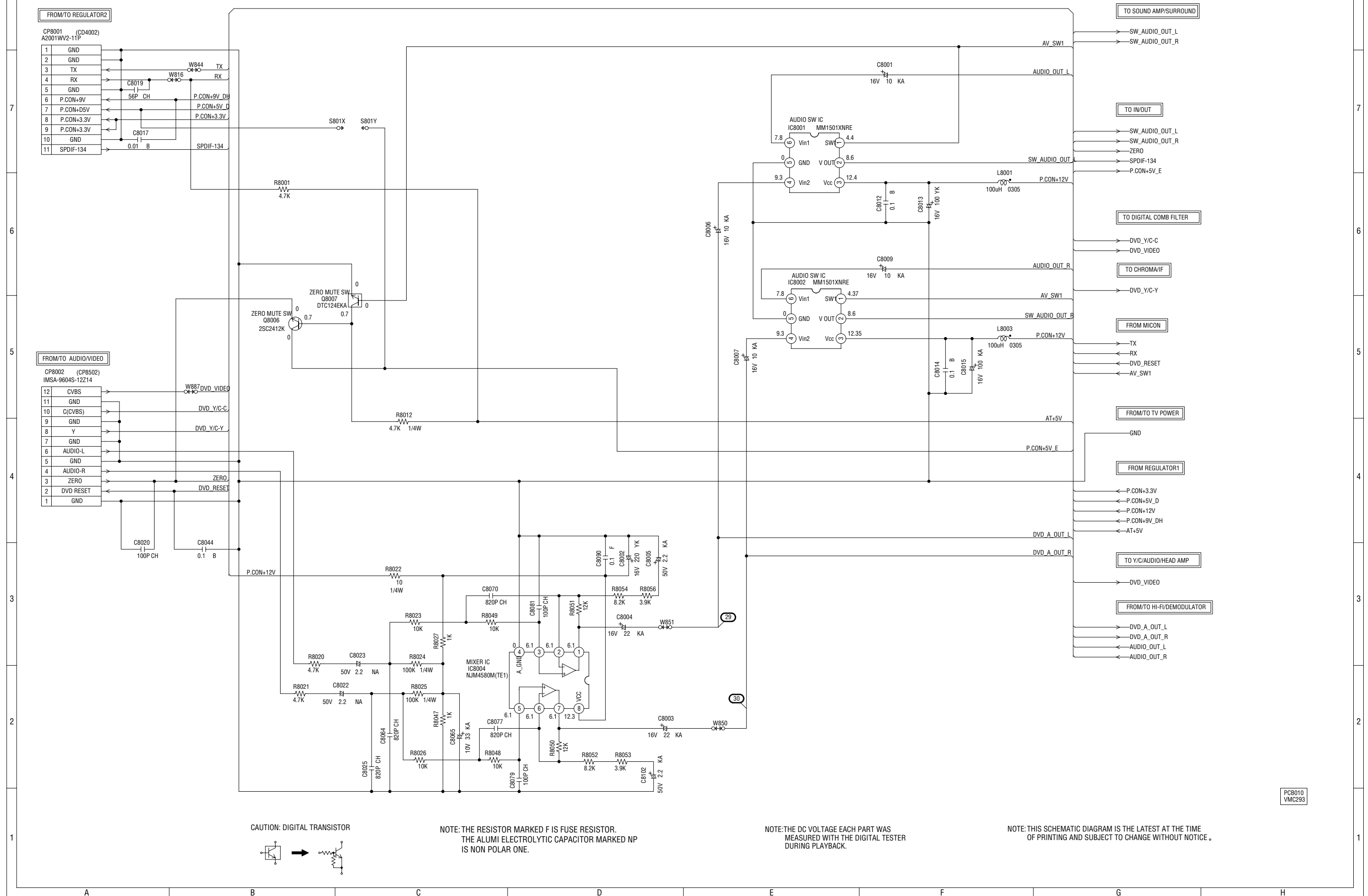
**CAUTION** SINCE THESE PARTS MARKED BY  ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

**ATTENTION:** LES PIÈCES RÉPARÉES PAR UN  ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

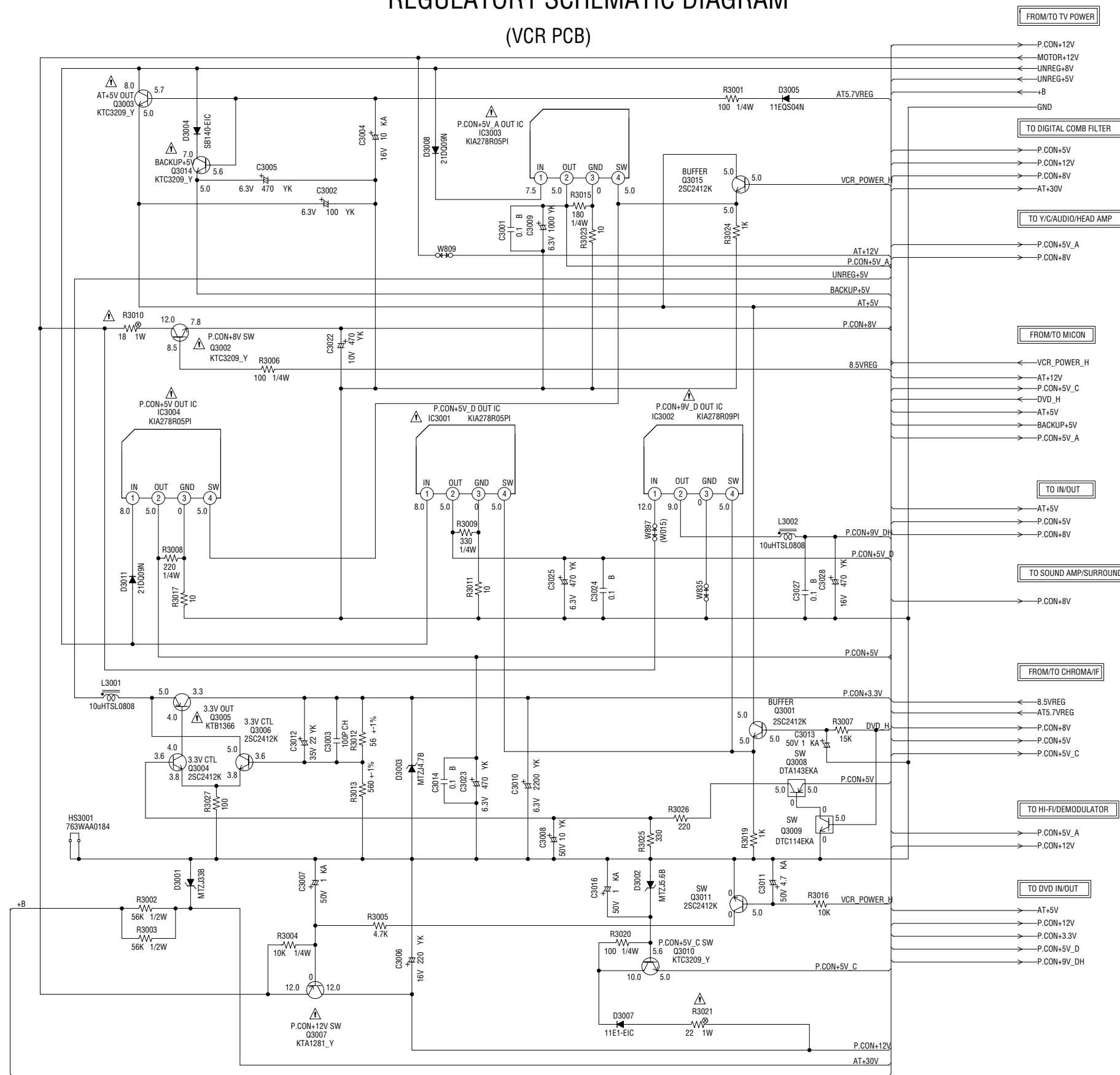
NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

# DVD IN/OUT SCHEMATIC DIAGRAM (VCR PCB)




# REGULATOR1 SCHEMATIC DIAGRAM


(VCR PCB)



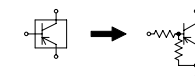
NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

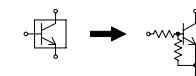
**ATTENTION** - LES PIÈCES RÉPARÉES PAR UN  ÉTANT DANGEREUSES AN POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

**CAUTION** - SINCE THESE PARTS MARKED BY  ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

CAUTION: DIGITAL TRANSISTOR

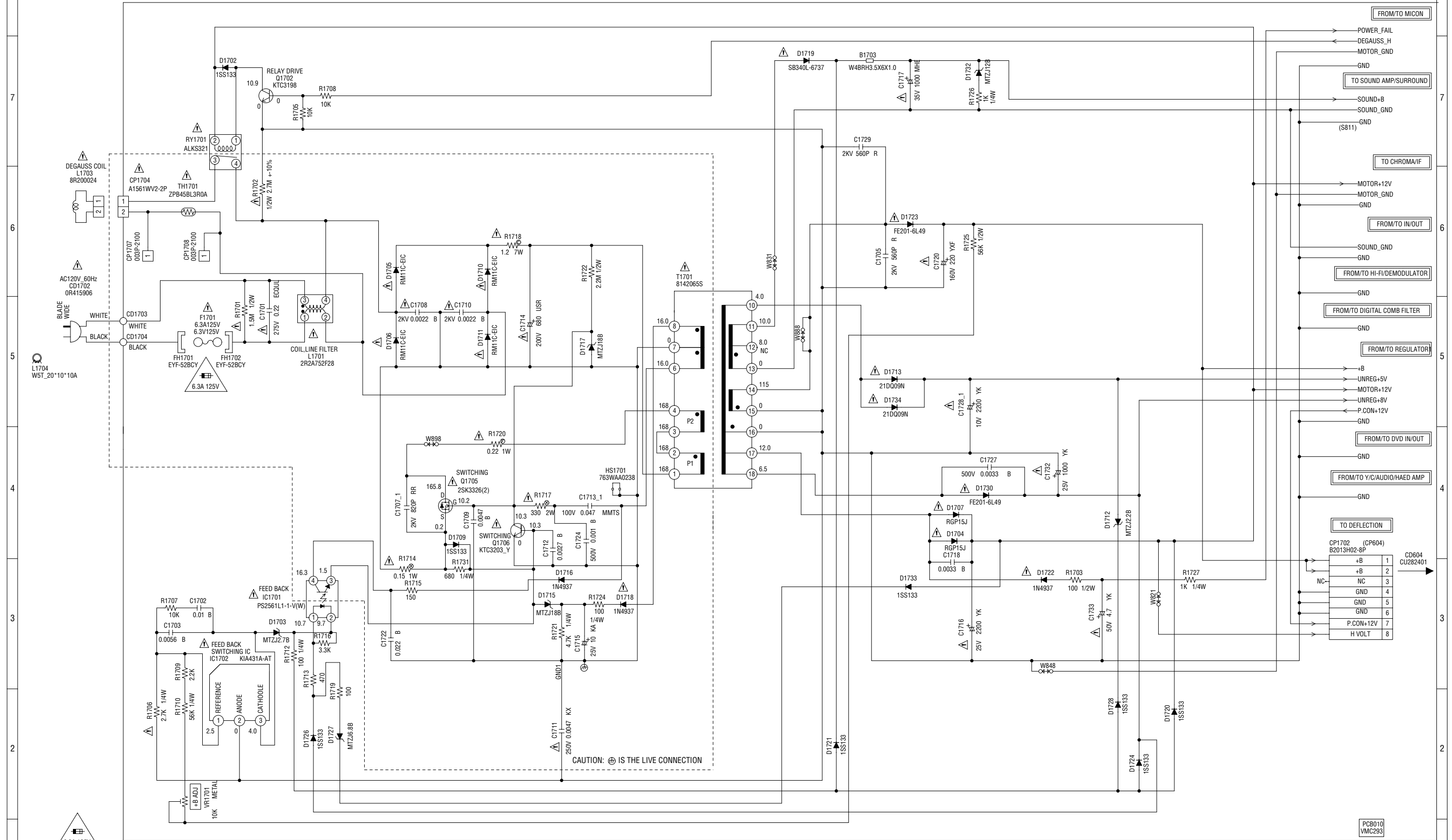


CAUTION: DIGITAL TRANSISTOR



PCB010  
VMC293

# TV POWER SCHEMATIC DIAGRAM (VCR PCB)



**CAUTION:** FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,  
REPLACE ONLY WITH THE SAME TYPE FUSE  
6.3A 125V (F1701)

**ATTENTION:** POUR UNE PROTECTION CONTINUE LES RISQUES D'INCENDIE  
N'UTILISER QUE DES FUSIBLES DE MEME TYPE  
6.3A 125V (F1701)

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME  
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

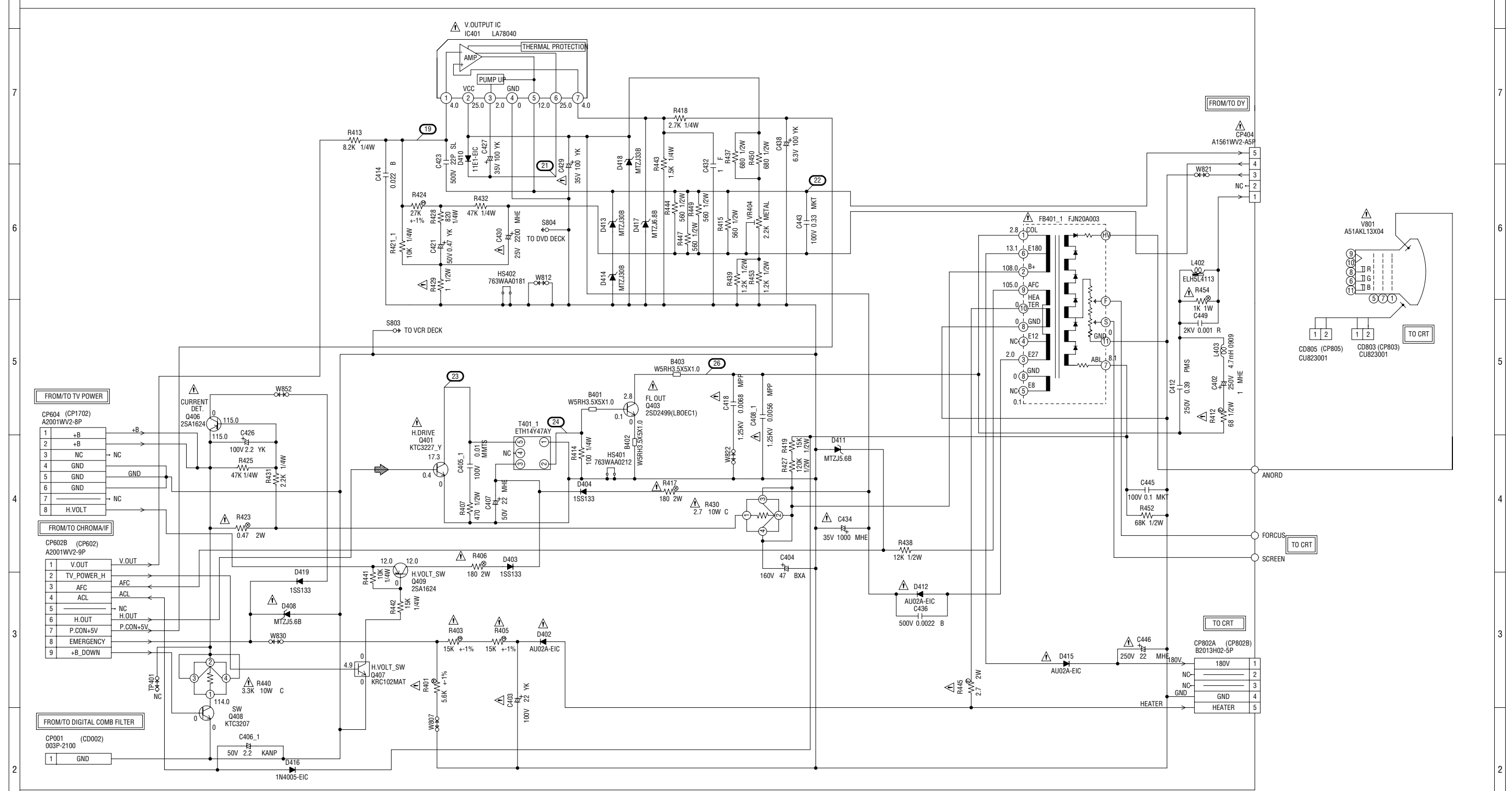
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED  
WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST  
WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

**ATTENTION:** LES PIECES REPARÉES PAR UN ⚡ ETANT  
DANGEREUSES AN POINT DE VUE SECURITE  
N'UTILISER QUE CELLES DECRIRES  
DANS LA NOMENCLATURE DES PIECES.

**CAUTION:** SINCE THESE PARTS MARKED BY ⚡ ARE  
CRITICAL FOR SAFETY, USE ONES  
DESCRIBED IN PARTS LIST ONLY.


NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR.  
THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP  
IS NON POLAR ONE.


# DEFLECTION SCHEMATIC DIAGRAM (TV PCB)




NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

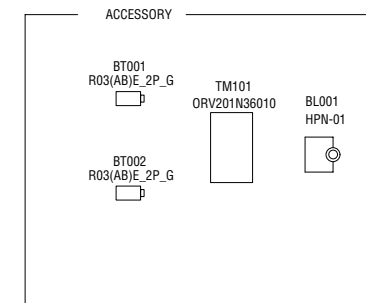
**CAUTION** SINCE THESE PARTS MARKED BY  ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.


**ATTENTION** LES PIECES REPAREES PAR UN  ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.


**CAUTION: DIGITAL TRANSISTOR**  


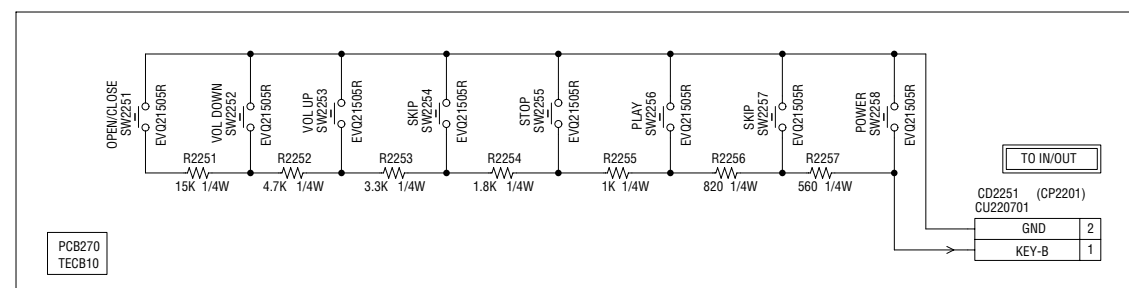
PCB080  
TMC564

## CRT BLOCK



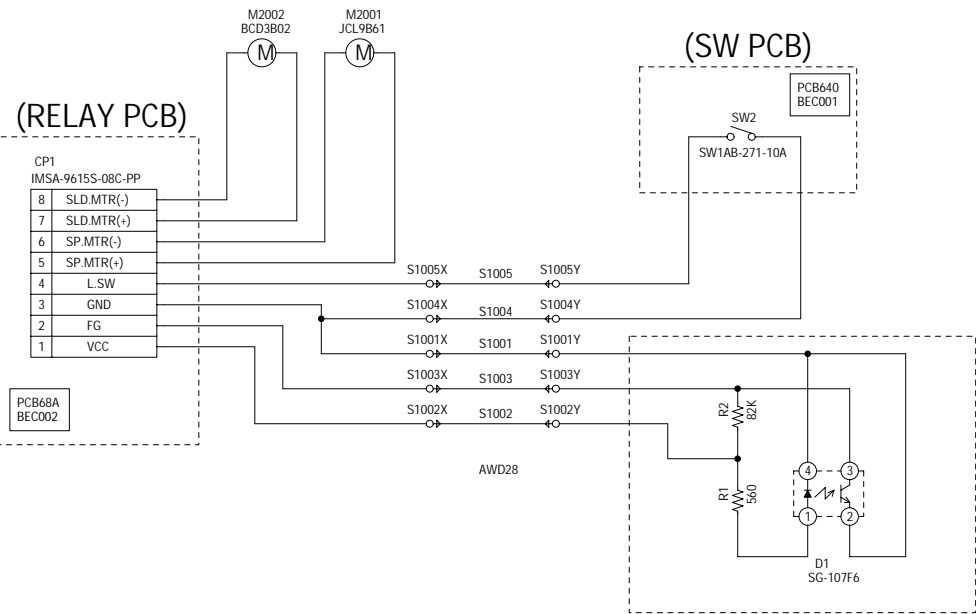
**CAUTION** SINCE THESE PARTS MARKED BY  ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

**ATTENTION:** LES PIÈCES RÉPARÉES PAR UN  ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.





RELAY/SW/FG SCHEMATIC DIAGRAM



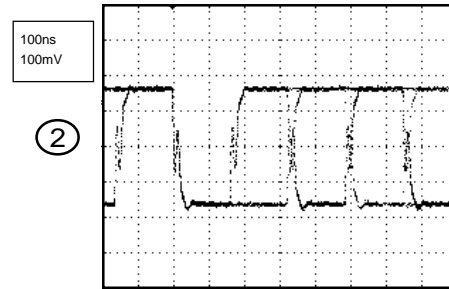
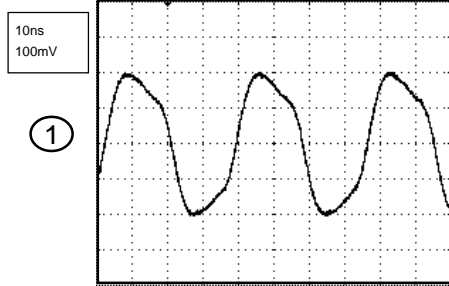
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME  
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE .

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED  
WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST  
WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

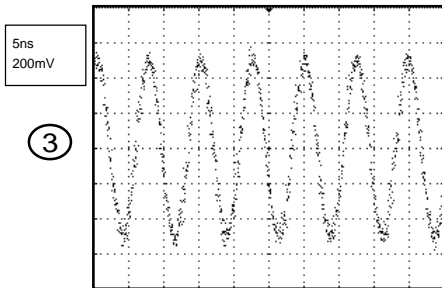


# WAVEFORMS

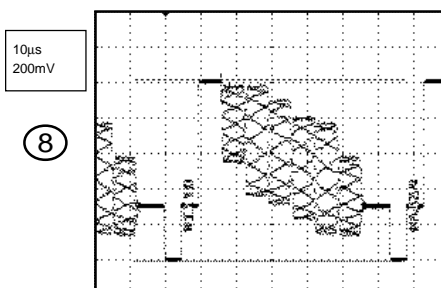
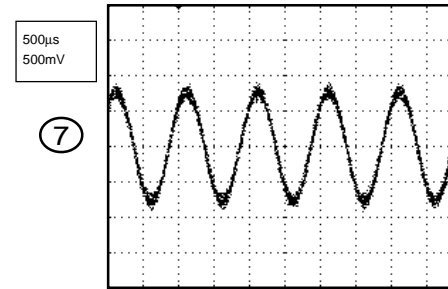
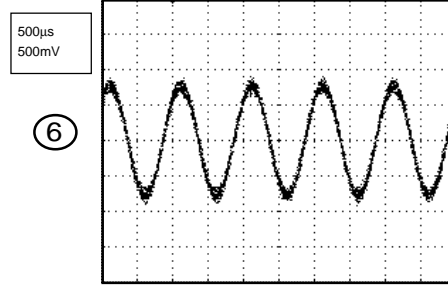
## MPEG/MICON



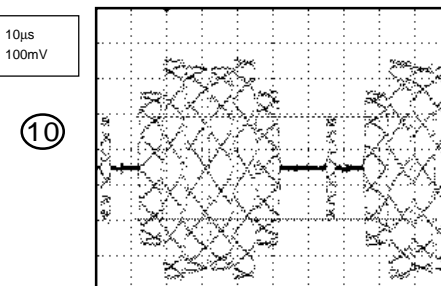
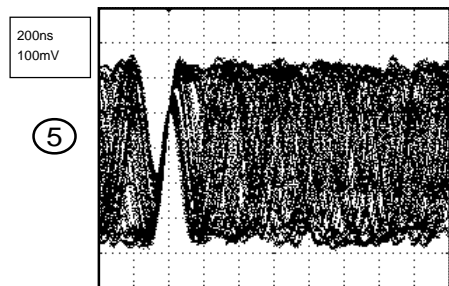
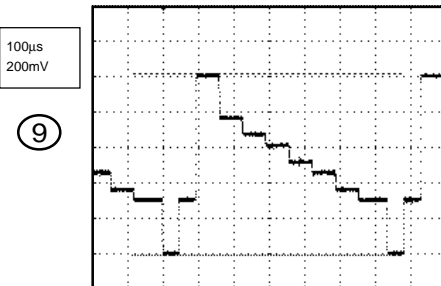
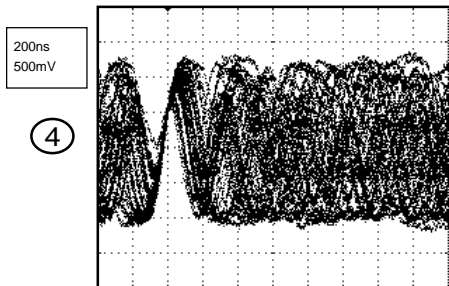
## MEMORY



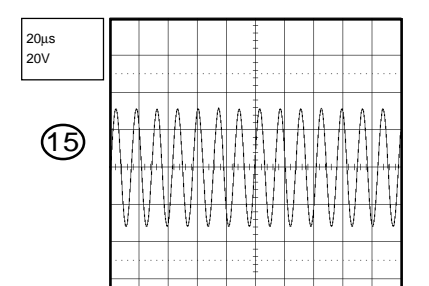
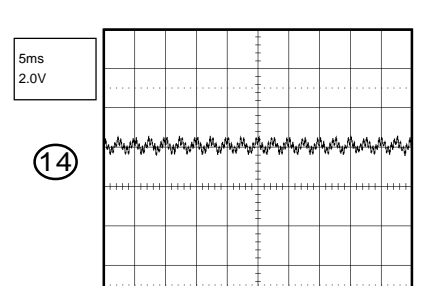
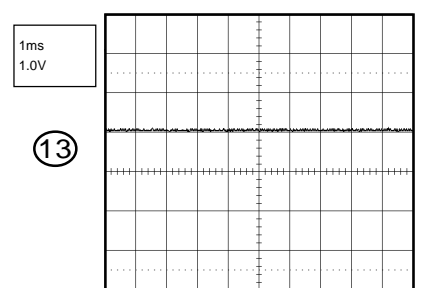
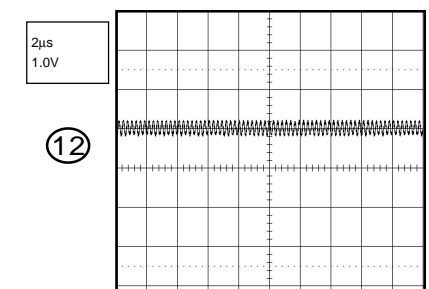
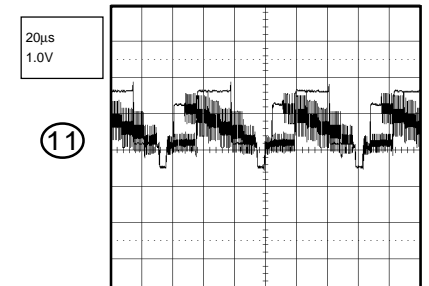
## AUDIO/VIDEO



## RF AMP/DSP



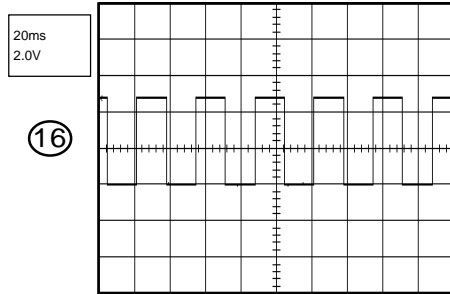
## Y/C/AUDIO/HEAD AMP



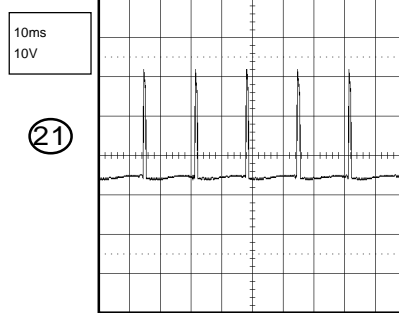
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

# WAVEFORMS

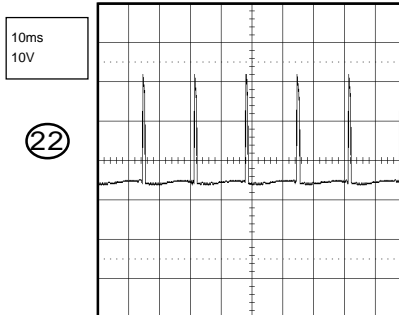
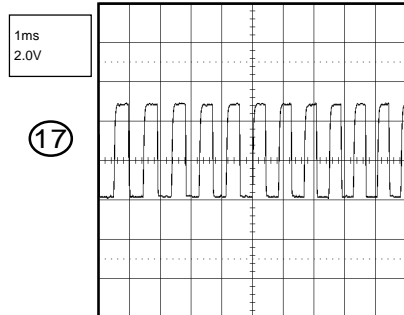
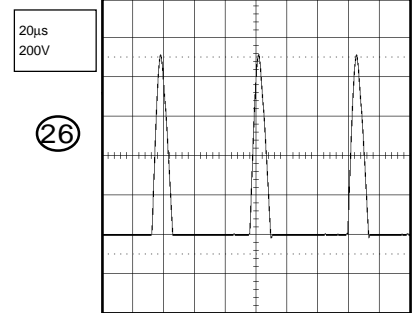
## MICON



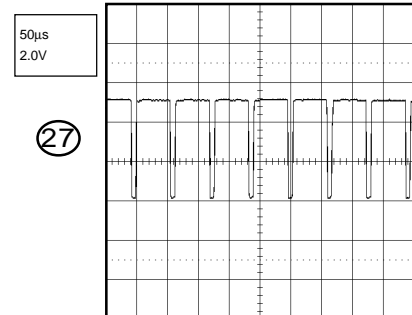
## DEFLECTION



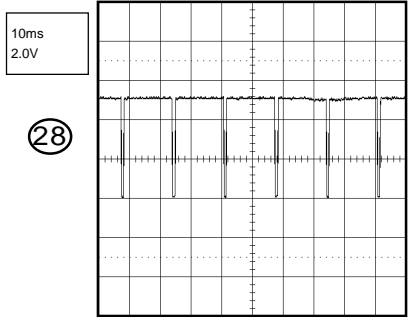
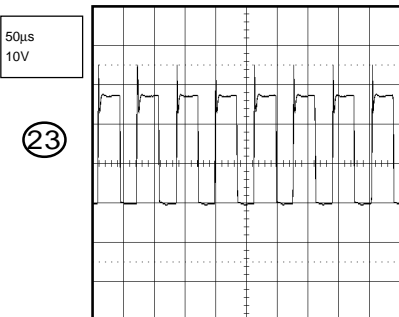
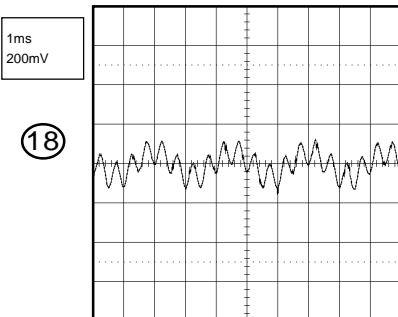
## DEFLECTION



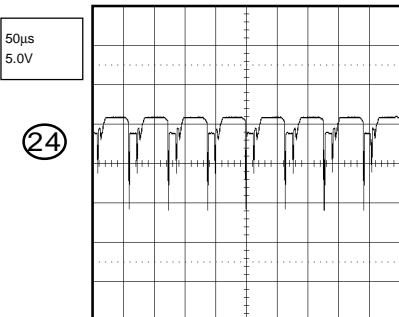
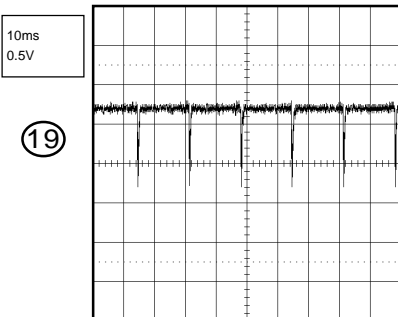
## MICON



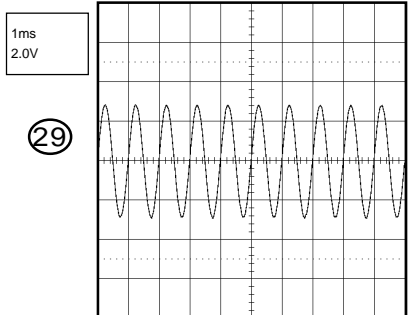
## SOUND AMP/SURROUND



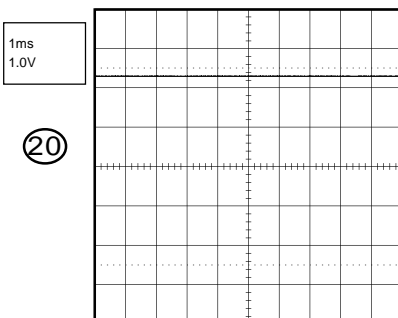
## DEFLECTION



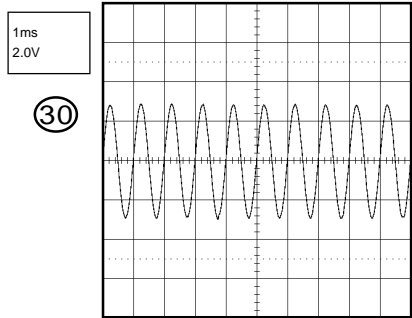
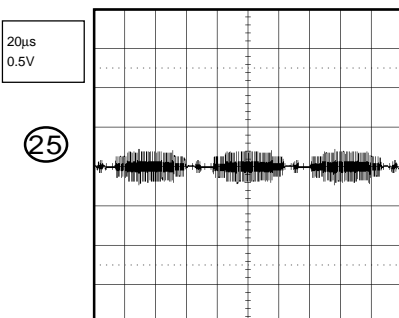
## DVD IN/OUT



## Hi-Fi/DEMODULATOR



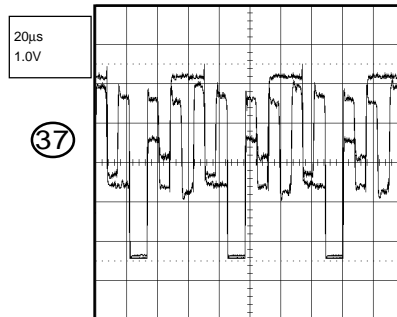
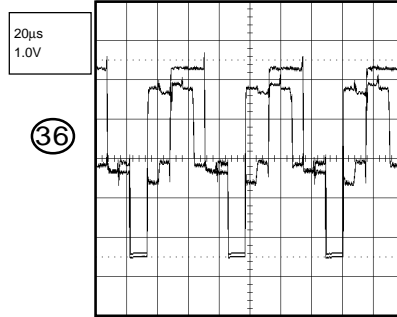
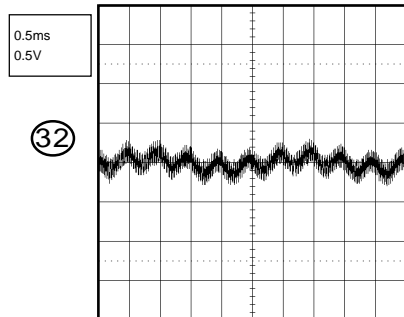
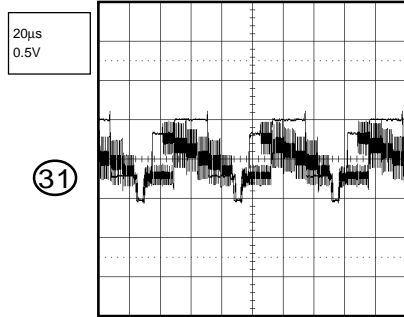
## CHROMA/IF



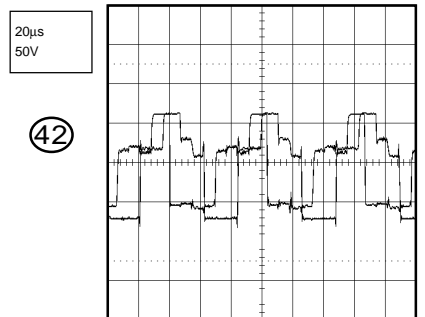
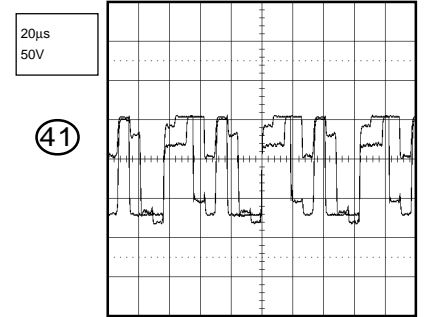
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

# WAVEFORMS

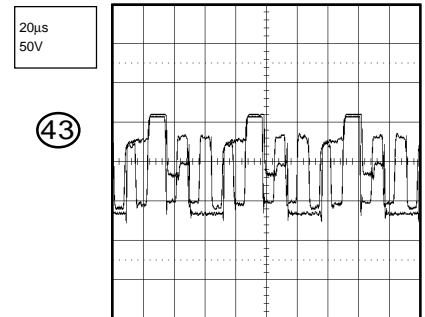
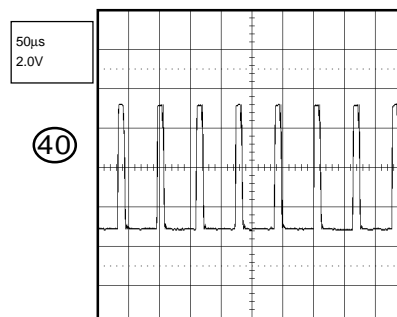
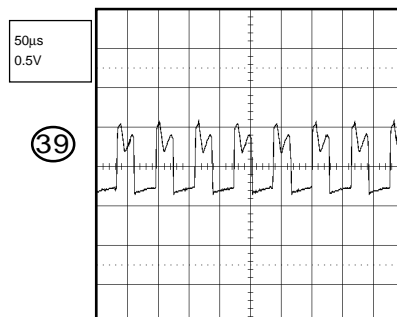
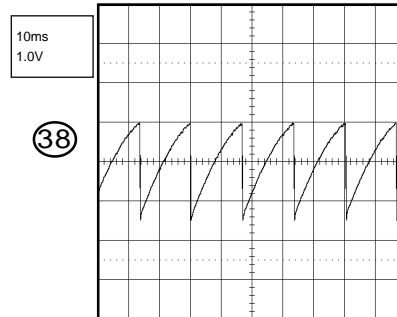
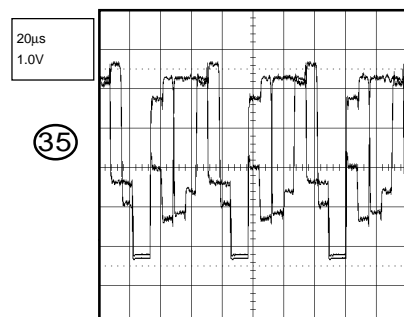
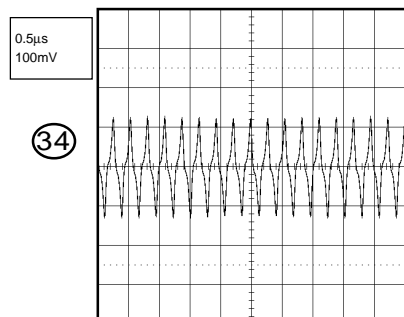
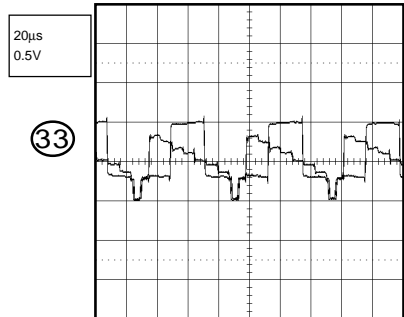
## DIGITAL COMB FILTER



## CRT/OPERATION

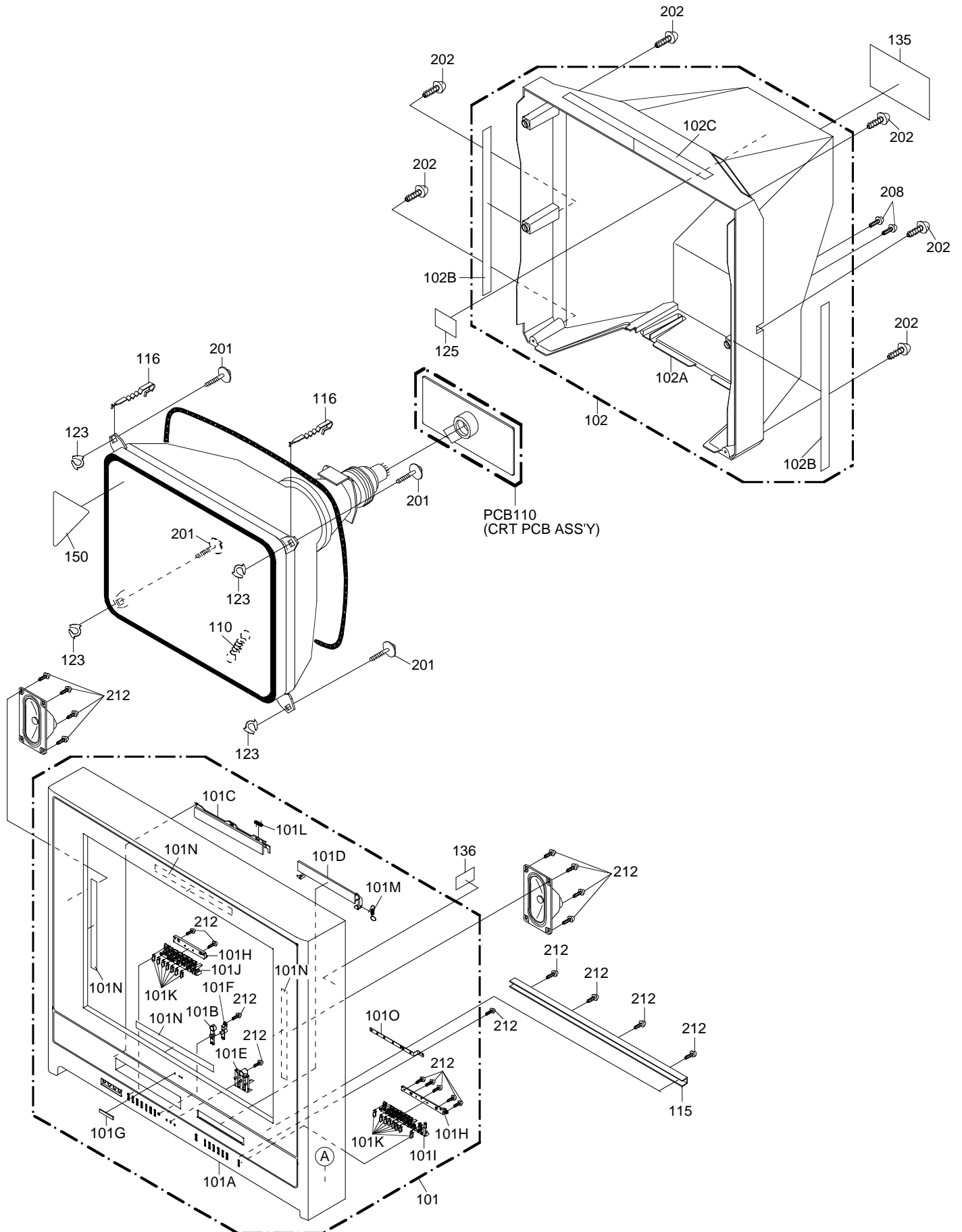


## CHROMA/IF

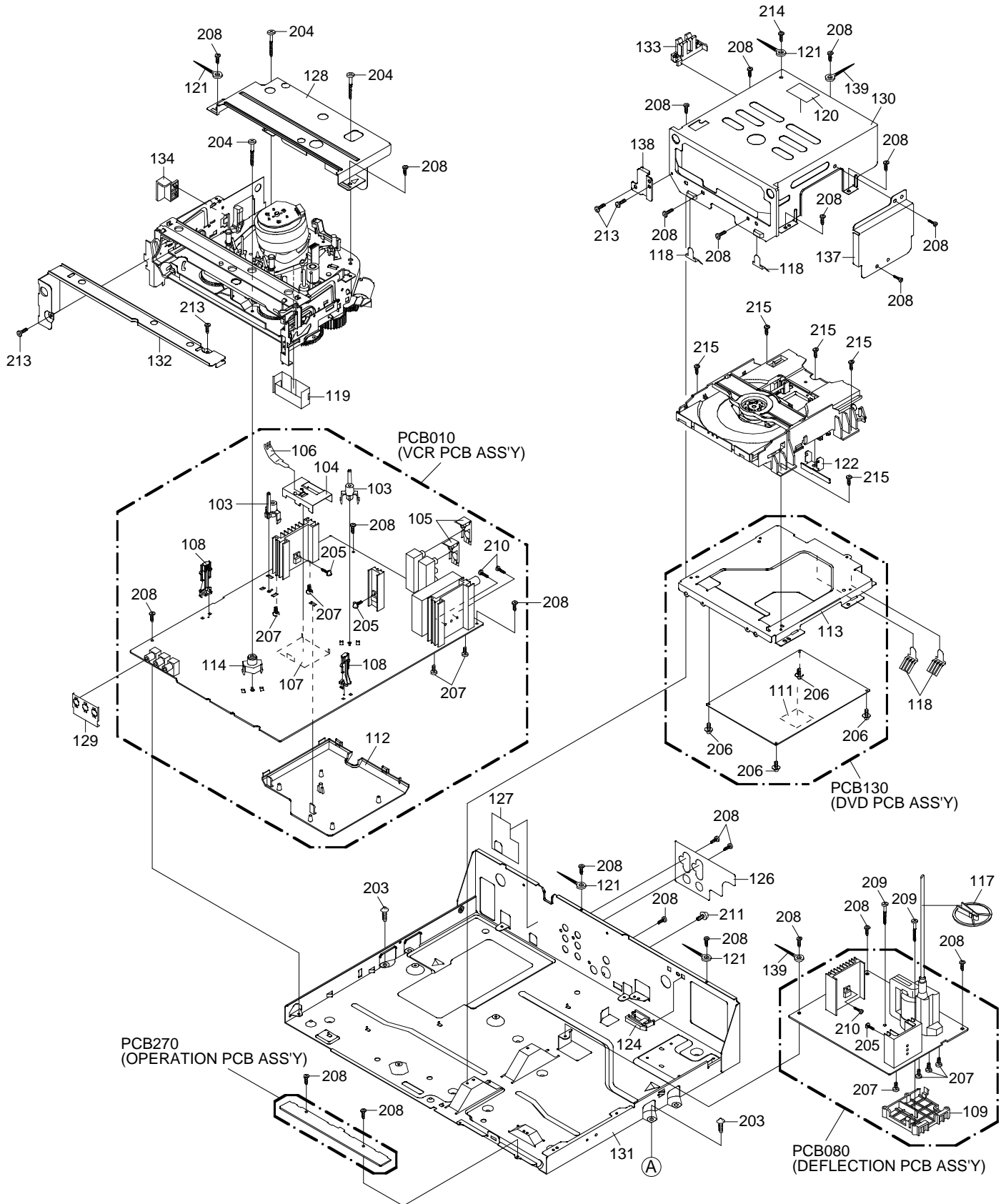


NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

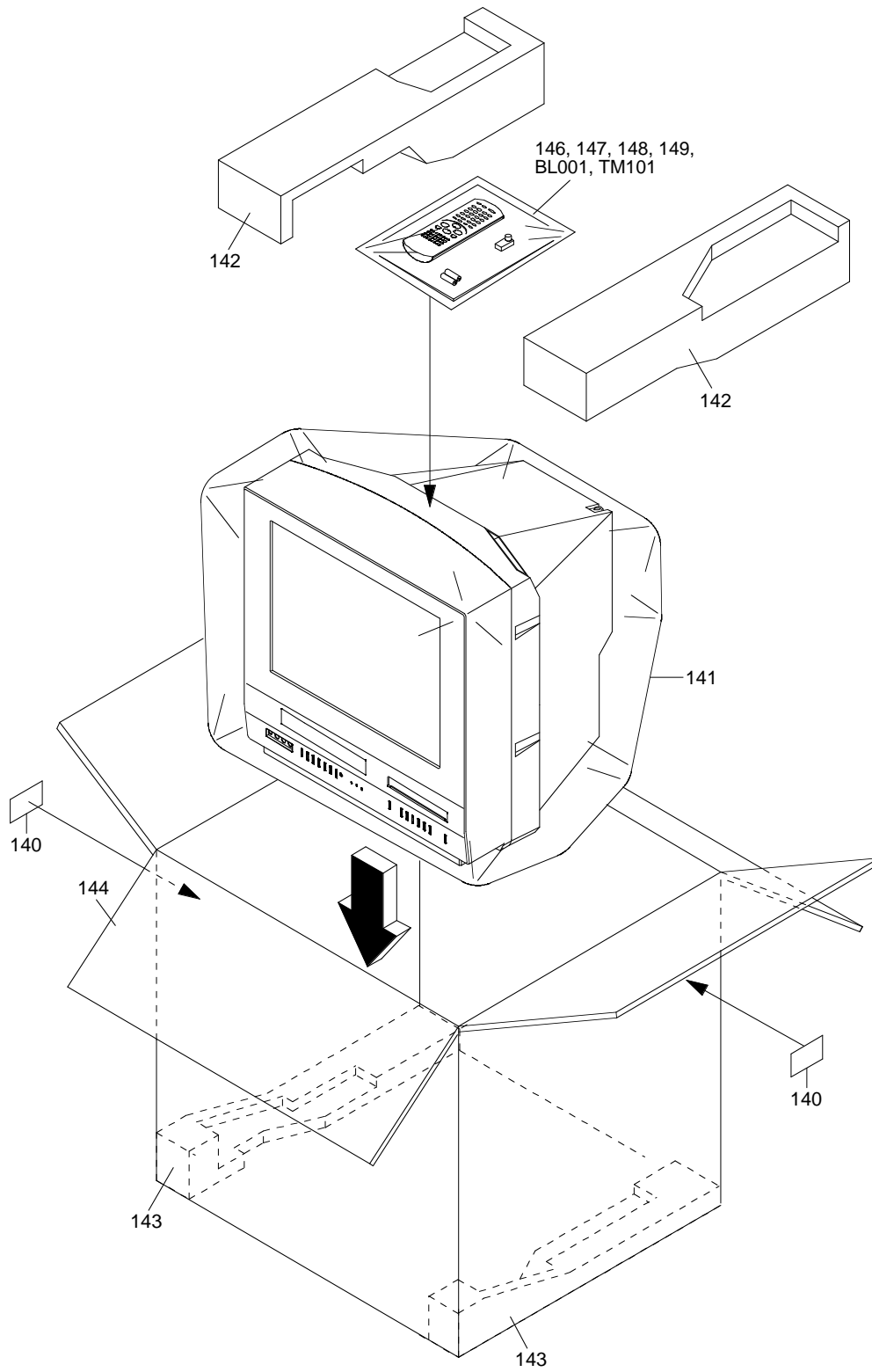
# MECHANICAL EXPLODED VIEW



# MECHANICAL EXPLODED VIEW

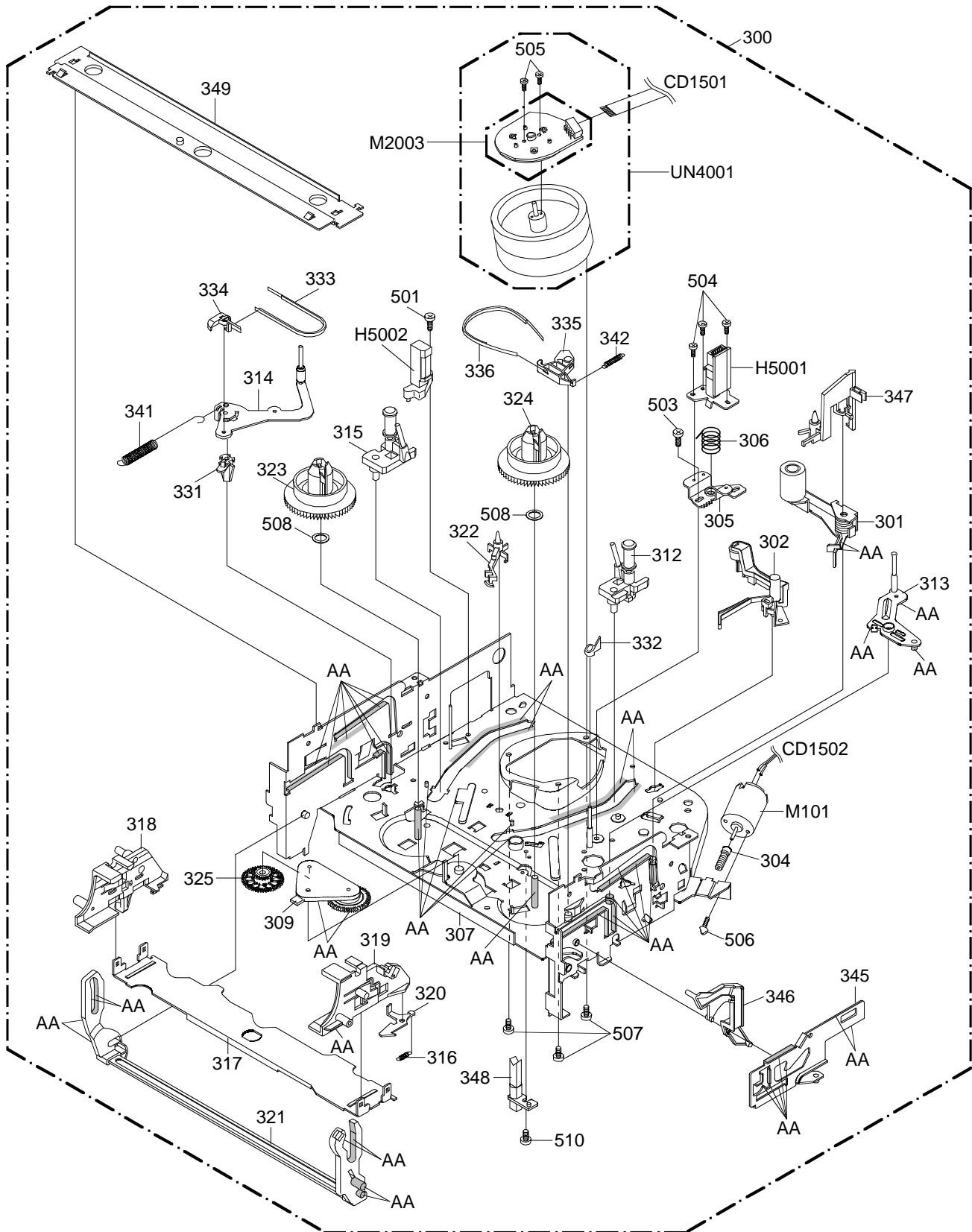


# MECHANICAL EXPLODED VIEW (PACKING DIAGRAM)





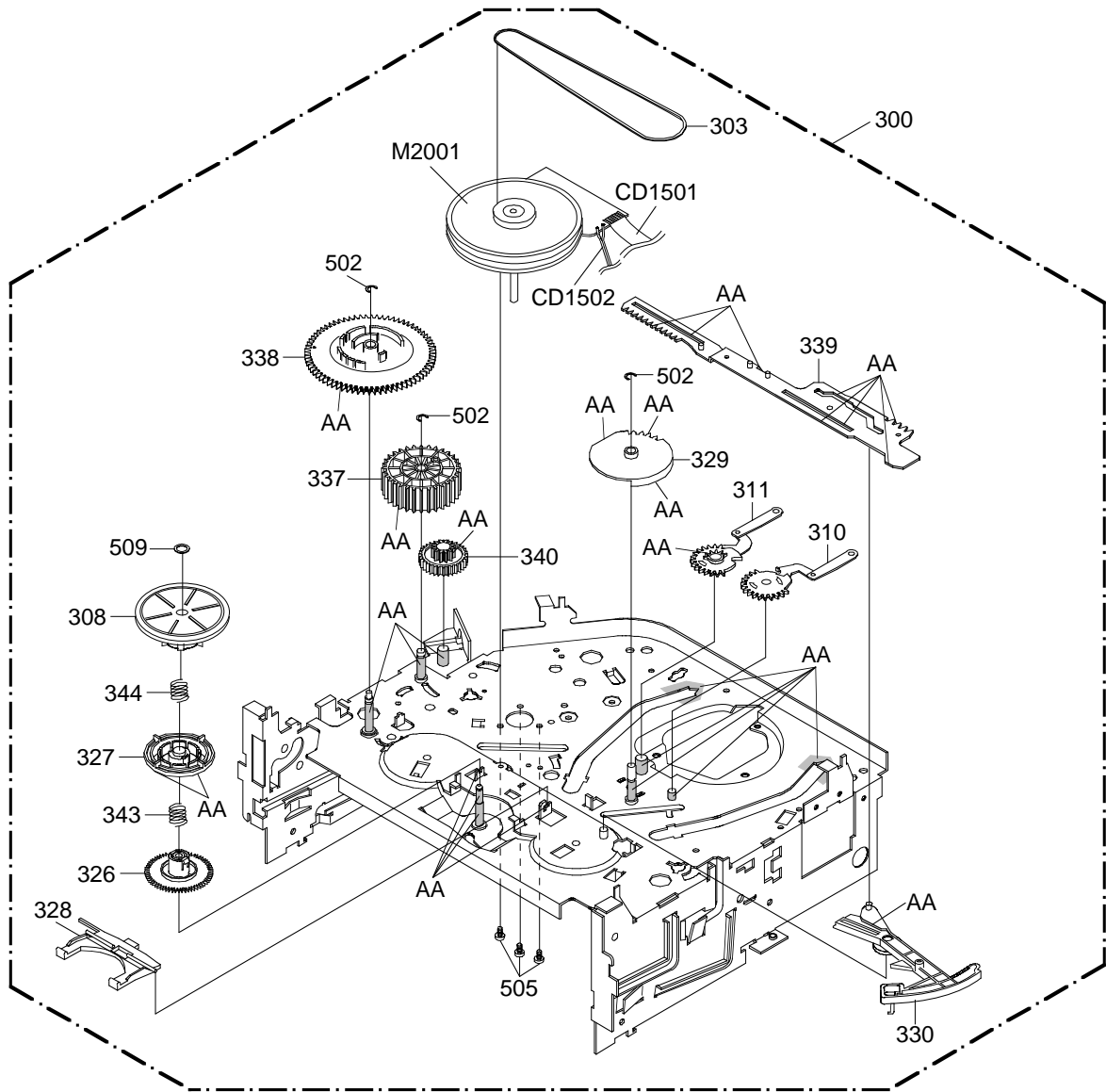
## CHASSIS EXPLODED VIEW (TOP VIEW)



CLASS	MARK
GREASE	AA

**NOTE:** Applying positions AA for the grease are displayed for this section.  
Check if the correct grease is applied for each position.

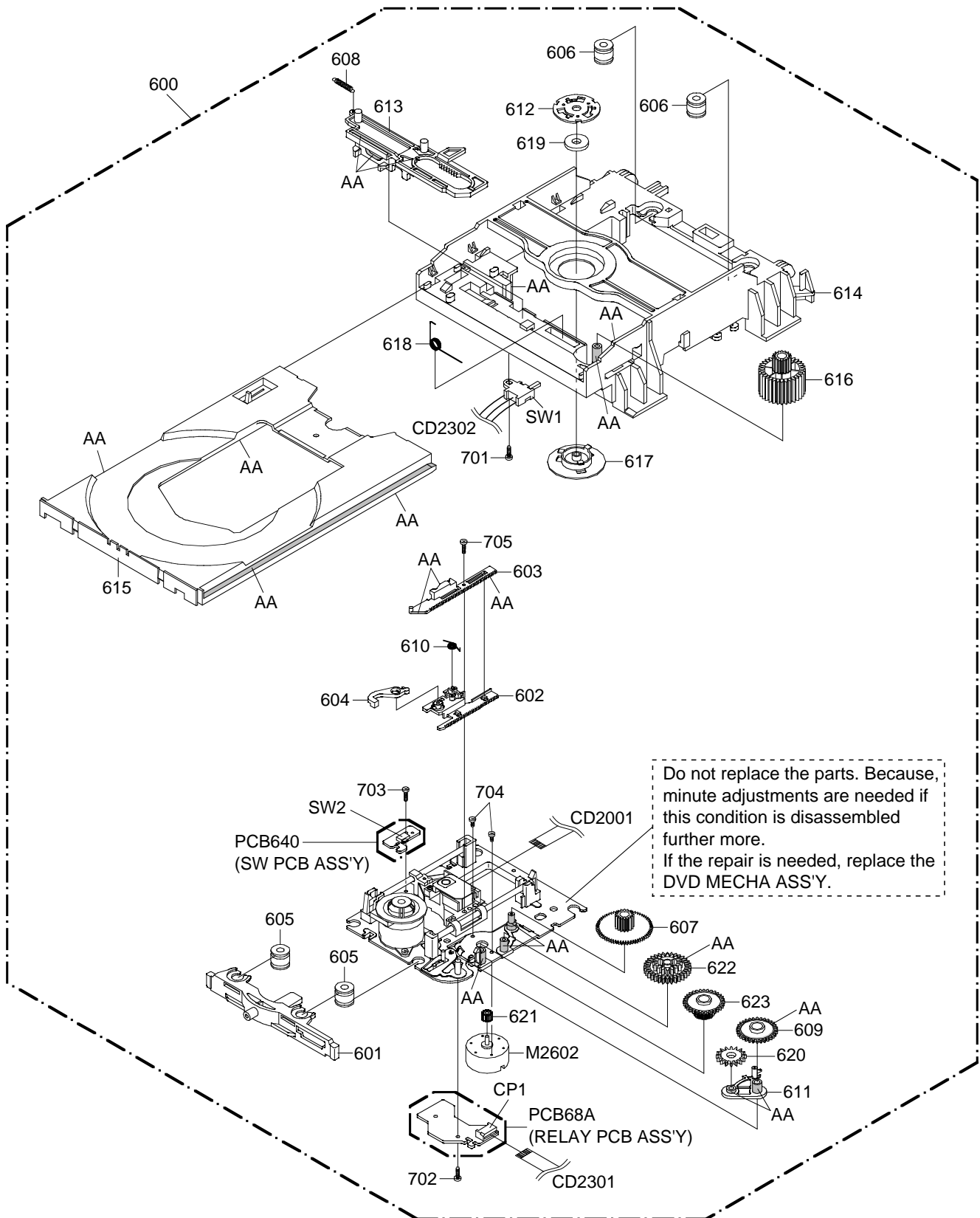
## CHASSIS EXPLODED VIEW (BOTTOM VIEW)



CLASS	MARK
GREASE	AA

**NOTE:** Applying positions AA for the grease are displayed for this section.  
Check if the correct grease is applied for each position.

# DVD DECK EXPLODED VIEW



CLASS	MARK
GREASE	AA

**NOTE:** Applying positions AA for the grease are displayed for this section.  
Check if the correct grease is applied for each position.

# MECHANICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description
101	AE003099	7A701A032A	FRONT CABI ASS'Y
101A	AE003100	701WPJC516	CABINET,FRONT
101B	AE003101	711WPA0200	PLATE,FRONT
101C	AE003102	712WPJB973	FLAT,FLAP
101D	AE003103	712WPJB987	FLAP,DVD
101E	AE003104	713WPA0311	GLASS,LED
101F	AE003105	713WPA0312	GUIDE,REMOCON
101G	AD302008	7235490036	BADGE,BRAND
101H	AE003106	735WPA0805	STOPPER,BUTTON
101I	AE003107	735WPA0808	BUTTON,FRAME-DVD
101J	AE003108	735WPA0809	BUTTON,FRAME-VCR
101K	AE003109	735WPEA001	BUTTON,CAP
101L	AD301686	743WKA0037	SPRING,FLAP
101M	AE001324	742WKA0001	SPRING,DVD-FLAP
101N	AE003110	800WQ0A052	FELT SHEET
101O	AE003462	752WSAA068	SHIELD BUTTON,DVD
102	AE003111	7A702A002A	BACK CABI ASS'Y
102A	AE000224	702WPA1000	CABINET,BACK
102B	AE003112	800WQ0A032	FELT SHEET
102C	AE003113	800WQ0A036	FELT SHEET
103	BZ710658	701WPA0751	HOLDER,DECK
104	BZ710466	752WSA0230	SHIELD,CASE HEAD AMP
105	BZ710659	752WSA0290	SHIELD,COMPO
106	BZ710331	753WUAA006	SPRING,EARTH HEAD AMP
107	AD301956	752WSA0308	SHIELD,COVER HEAD AMP
108	BZ710498	85OP700038	HOLDER,END SENSOR
109	BZ710459	761WPA0223	HOLDER,FBT
110	AD300759	741WUA0021	SPRING,EARTH
111	AE000754	7232020748	SHEET,IC
112	AD301957	755WPA0035	COVER,PCB
113	AE003114	761WSA0137	ANGLE,DECK
114	BZ710577	701WPA0686	HOLDER,DECK
115	BZ710677	752WSA0287	ANGLE,FRONT
116	BZ710259	762WPA0011	HOLDER,CRT WIRE
117	BZ710260	899HV3T000	HOLDER,ANODE WIRE
118	AD301574	744WUA0013	SPRING,EARTH
119	AD301966	752WSA0327	SHIELD,COVER FPC
120	AD301688	7260000341	SHEET,CAUTION
121	BZ710039	8995034000	CORD CLIP UL CO.
122	AE002846	752WSA0384	ANGLE,DVD 2
123	AD300135	769WSA0011	WASHER CRT T=0.5
124	AE000164	774WPA0005	HOLDER,WIRE-2
125	AE000159	7260000346	SHEET,CRT NO.
126	AE000733	7230007691	SHEET,JACK
127	AE000157	724WNA0009	SHEET,PVC
128	AE000160	752WSA0331	SHIELD,COVER DECK
129	BZ710671	752WSA0292	SHIELD,AV JACK
130	AD301962	752WSA0323	DVD,TOP
131	AE003463	752WSAA067	PLATE,BOTTOM
132	AD301964	752WSA0324	VCR,TOP
133	BZ710694	774WPA0002	HOLDER,WIRE
134	BZ710618	755WPAA012	PLATE,COVER LIGHT (L)
135	AE003115	722549A309	SHEET,RATING
136	AD300007	7230006755	SHEET,CAUTION
137	AE000161	752WSA0337	SHIELD,DVD
138	AE000162	752WSA0343	HOLDER,VCR
139	AD300758	899EFBA001	WIRING CLIP
140	AE003116	723000C478	SHEET,BAR CODE
141	AE000010	791WHA0085	LAMIFILM,BAG
142	AE003117	792WHA0522	PACKAGE,TOP
143	AE003118	792WHA0523	PACKAGE,BOTTOM
144	AE003119	793WCDC076	GIFT BOX
145	AE003120	A5L0024975	INSTRUCTION BOOK KIT
146	AE000060	JB5UD300	POLYBAG,INSTRUCTION(RED CAUTION)
147	AE001184	J5F10129A	INFORMATION SHEET
148	AE003121	J5L00201A	INSTRUCTION BOOK
149	AD302404	J5500817	REGISTRATION CARD
150	AE003464	723000C563	POP LABEL

# MECHANICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
201	AD302054	8141J50C54	SCREW,TAP TITE(P) GW22	5x35
202	BZ710035	8117540A64	SCREW,TAPPING(B0) TRUSS	4x16
203	BZ710320	8117540804	SCREW,TAPPING(B0) TRUSS	4x8
204	BZ710582	8109130B94	SCREW,TAP TITE(B) R PAN	3x29
205	BZ710239	8109130A04	SCREW,TAP TITE(B) WH7	3x10
206	BZ710562	8109130804	SCREW,TAP TITE(B) WH7	3x8
207	BZ710019	8109630802	SCREW,TAP TITE(B) BRAZIER	3x8
208	BZ710678	8109230804	SCREW,TAP TITE(B) BIND	3x8
209	BZ710409	8107630B04	SCREW,TAP TITE(S) BRAZIER	3x20
210	BZ710018	8107630804	SCREW,TAP TITE(S) BRAZIER	3x8
211	AD301968	8107230404	SCREW,TAP TITE(S) BIND	3x4
212	BZ710030	8110630804	SCREW,TAP TITE(P) BRAZIER	3x8
213	BZ710299	8107230604	SCREW,TAP TITE(S) BIND	3x6
214	BZ710337	8107930604	SCREW,CUP(S)	3x6
215	AE002618	810F130804	SEMS(F)	3x8

# CHASSIS REPLACEMENT PARTS LIST

	Location No.	TSB P/N	Reference No.	Description	
	300	AE003122	A5J9027420A	DECK ASS'Y	A5J9027420A
	301	AE002754	85OA400240	PINCH ROLLER BLOCK (VA)	
	302	BZ710682	85OA500026	AHC ASS'Y	
	303	BZ710193	85OP200290	BELT,CAPSTAN (S)	
	304	BZ710515	85OP600581	WORM	
	305	BZ710094	85OP500083	BASE,AC HEAD	
	306	BZ710112	85OP800324	SPRING,AC HEAD	
	307	BZ710516	85OA000459	MAIN CHASSIS ASS'Y	
	308	BZ710517	85OA200089	CLUTCH ASS'Y	
	309	BZ710518	85OA200090	ARM IDLER ASS'Y	
	310	BZ710519	85OA300065	LOADING ARM S UNIT	
	311	BZ710520	85OA300066	LOADING ARM T UNIT	
	312	BZ710521	85OA400223	INCLINED BASE T UNIT 3S	
	313	BZ710522	85OA400232	P5 ARM ASS'Y 2	
	314	BZ710650	85OA400235	TENSION ARM ASS'Y 2	
	315	BZ710524	85OA400231	INCLINED BASE S UNIT	
	316	AE000442	85OP800367	SPRING,LOCKER	
	317	BZ710526	85OP900736	CASS,HOLDER	
	318	BZ710527	85OP900748	CASS,SIDE L	
	319	BZ710528	85OP900749	CASS,SIDE R	
	320	BZ710529	85OP900739	LOCKER,R	
	321	BZ710530	85OA900228	LINK UNIT	
	322	BZ710531	85OP000496	POST,CASS GUIDE	
	323	BZ710532	85OP200316	REEL,S (S)	
	324	BZ710533	85OP200317	REEL,T (S)	
	325	BZ710534	85OP200308	GEAR,IDLER	
	326	BZ710535	85OP200311	GEAR,CLUTCH	
	327	BZ710536	85OP200312	GEAR,COUPLING	
	328	BZ710537	85OP200313	LEVER,CLUTCH	
	329	BZ710538	85OP300194	GEAR,MAIN LOADING	
	330	BZ710092	85OP400490	LEVER,TENSION	
	331	BZ710093	85OP400492	HOLDER,TENSION	
	332	BZ710366	85OP400520	CAP,P4	
	333	BZ710762	85OP400542	BAND,TENSION	
	334	BZ710540	85OP400533	CONNECT,TENSION	
	335	BZ710541	85OP600573	ARM,BRAKE T	
	336	BZ710763	85OP600584	BAND,BRAKE T	
	337	BZ710543	85OP600577	CAM,PINCH ROLLER	
	338	BZ710544	85OP600578	CAM,MAIN	
	339	BZ710545	85OP600579	ROD,MAIN	
	340	BZ710546	85OP600582	GEAR,JOINT	
	341	BZ710110	85OP800322	SPRING,TENSION	
	342	BZ710547	85OP800360	SPRING,BRAKE T	
	343	BZ710548	85OP800355	SPRING,COUPLING	
	344	BZ710549	85OP800356	SPRING,RING	
	345	BZ710565	85OP900750	LEVER,LINK 2	
	346	BZ710551	85OP900744	LEVER,FLAP	
	347	BZ710552	85OP900745	CASS,OPENER	
	348	BZ710106	85OP700035	REFLECTOR,LED	
	349	BZ710514	85OP900746	BRACKET,TOP 3V	
	501	BZ710049	8107226804	SCREW,TAP TITE(S) BIND	2.6x8
	502	BZ710058	83ETW30000	E-RING	3.0
	503	BZ710371	8107226404	SCREW,TAP TITE(S) BIND	2.6x4
	504	BZ710046	8102120604	SCREW,PAN	M2x6
	505	BZ710050	8109126604	SCREW,TAP TITE(B) PAN	2.6x6
	506	BZ710553	810A130404	SCREW/WASHER(A)	M3x4
	507	BZ710219	810A126504	SCREW/WASHER(A)	M2.6x5
	508	BZ710056	82Q264713N	POLYSLIDER WASHER	2.6x4.7xT0.13
	509	BZ710054	82P184505N	POLYSLIDER WASHER(CUT)	1.8x4.5xT0.5
	510	BZ710017	8107226604	SCREW,TAP TITE(S) BIND	2.6x6
	CD1501	BZ614292	122H071704	CORD JUMPER	2H071704
	CD1502	AD301953	122Y021002	CORD JUMPER	2Y021002
	H5001	AD301675	1523Q91003	HEAD (AUDIO CONTROL)	VTR-1X2RPE22-756
	H5002	AD301676	1543Q02014	HEAD (FULL ERASE)	VTR-1X2ERS11-154
△	M101	BZ710554	1596S98001	MOTOR (LOADING)	MDB2B66
△	M2001	AE002696	1510S98040	CAPSTAN DD UNIT	F2QVB33B
	M2003	BZ710657	1589S11017	MICRO MOTOR	I2OAL05
△	UN4001	AE003123	A5J9016500	CYLINDER UNIT ASS'Y	A5J9016500

# DVD DECK REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
600	AE003124	A2D006A650	DVD MECHA ASS'Y	A2D006A650
601	AD301822	92P100022A	TRAVERSE HOLDER	
602	AE002480	92P100080A	RACK,FEED 1A	
603	AE002481	92P100081A	RACK,FEED 2A	
604	AD301825	92P100035A	LEVER,RACK FEED	
605	AD301826	92P200006A	INSULATOR(F)	
606	AD301827	92P200007A	INSULATOR(R)	
607	AD301846	92P100029A	GEAR,FEED	
608	AE001179	92P300009A	SPRING,RACK L	
609	AD301845	92P100028A	GEAR,MIDDLE 3	
610	AE002482	92P300019A	SPRING,RACK FEED 1A	
611	AE002179	92P100040A	ARM,IDLER 2	
612	AD301833	92P000001A	CLAMPER PLATE	
613	AD301834	92P100019A	RACK,LOADING	
614	AD301835	92P100020A	MAIN FRAME M	
615	AE001336	92P100039A	TRAY	
616	AD301837	92P100023A	GEAR,MAIN	
617	AE002647	92P100082A	CLAMPER 2	
618	AD301839	92P300002A	SPRING,RACK LOADING	
619	AD301840	92P400002A	MAGNET,CLAMPER	
620	AD301847	92P100030A	GEAR,IDLER	
621	AD301842	92P100025A	GEAR,MOTOR	
622	AE002180	92P100083A	GEAR,MIDDLE 1	
623	AD301844	92P100027A	GEAR,MIDDLE 2	
701	BZ710187	8110226804	SCREW,TAP TITE(P) BIND	2.6x8
702	AD301851	8110120604	SCREW,TAP TITE(P) PAN	2x6
703	AD301852	8107220504	SCREW,TAP TITE(S) BIND	2x5
704	AD301853	8140117254	SCREW,PAN	M1.7x2.5 P3
705	AD301913	8110220804	SCREW,TAP TITE(P) BIND	2x8
CD2001	AD301855	122H001901	CORD JUMPER	2H001901
CD2301	AD301856	122H080701	CORD JUMPER	2H080701
CD2302	AE000148	06CH232101	CORD CONNECTOR	CH232101
CP1	AD301858	069JV80180	CONNECTOR PCB SIDE	IMSA-9615S-08C-PP-A
M2602	AD301861	1515S98001	FEED MOTOR	BCD3B81
PCB640	AD301862	A5E601V640	PCB ASS'Y	BEC001A
PCB68A	AD301863	A5E601V680	PCB ASS'Y	BEC002A
SW1	AD301866	0515S32001	SWITCH	SSS-23-6
SW2	AE001158	0500101036	PUSH SWITCH	ESE22MH22



# ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description
<b>RESISTORS</b>			
△R401	AD300036	R4X5T6562F	R,METAL 5.6K OHM 1/6W
△R403	AD300037	R4X5T6153F	R,METAL 15K OHM 1/6W
△R405	AD300037	R4X5T6153F	R,METAL 15K OHM 1/6W
△R406	AD302023	R3X28A181J	R,METAL 180 OHM 2W
△R412	BZ210021	R65582680J	R,FUSE 68 OHM 1/2W
△R417	AD302023	R3X28A181J	R,METAL 180 OHM 2W
△R423	BZ210051	R3X18AR47J	R,METAL OXIDE 0.47 OHM 2W
△R429	BZ210150	R002T2010J	RC 1 OHM 1/2W
△R430	AD301920	R5X34F2R7J	R,CEMENT 0 2.7 OHM 10W
△R440	AD301921	R5X34F332J	R,CEMENT 0 3.3K OHM 10W
△R445	BZ210104	R6558A2R7J	R,FUSE 2.7 OHM 2W
R449	AE000746	R00202561J	RC 560 OHM 1/2W
△R454	AE000676	R3K181102J	R,METAL 1K OHM 1W
△R814	BZ210026	R3X18A153J	R,METAL OXIDE 15K OHM 2W
△R815	BZ210026	R3X18A153J	R,METAL OXIDE 15K OHM 2W
△R816	BZ210026	R3X18A153J	R,METAL OXIDE 15K OHM 2W
△R1701	BZ210206	R002T2155J	RC 1.5M OHM 1/2W
△R1702	BZ210080	R0G3K2275K	RC 2.7M OHM 1/2W
△R1706	AD300651	R002T4272J	RC 2.7K OHM 1/4W
△R1714	AD301017	R3X181R15J	R,METAL OXIDE 0.15 OHM 1W
△R1717	AD301016	R3X28A331J	R,METAL OXIDE 330 OHM 2W
△R1718	BZ210250	R5Y2CE1R2J	R,CEMENT 1.2 OHM 7W
△R1720	BZ210190	R63581R22J	R,FUSE 0.22 OHM 1W
R2344	AE002014	R002021R2J	RC 1.2 OHM 1/2W
R2345	AE002014	R002021R2J	RC 1.2 OHM 1/2W
R3010	AD302206	R3X181180J	R,METAL OXIDE 18 OHM 1W
R3021	AE000147	R3X181220J	R,METAL OXIDE 22 OHM 1W
<b>CAPACITORS</b>			
C005	BZ110154	E02L00102M	CE 1000 UF 6.3V
C321	BZ210176	E02LF3222M	CE 2200 UF 25V
△C403	BZ110195	E02LU8220M	CE 22 UF 100V
C404	BZ110023	E62DFB470M	CE 47 UF 160V
△C408	BZ210157	P4N8FJ562H	CMPP 0.0056UF 1.25KV
C412	BZ110136	P4J7F3394J	CMPP 0.39 UF 250V PMS
△C418	BZ210161	P4N8FJ682H	CMPP 0.0068UF 1.25KV
△C429	AD301434	E02LU4101M	CE 100 UF 35V
△C430	BZ110101	E5EZF3222M	CE 2200 UF 25V
△C434	BZ110055	E5EZF4102M	CE 1000 UF 35V
△C446	AD300061	E5EZF220M	CE 22 UF 250V
C449	BZ110202	C0PLRR713K	CC 0.001 UF 2KV R
C801	AD301321	CQG0CH412J	CC 100 PF 50V CH
C820	BZ110247	C0JBB0713K	CC 0.001 UF 2KV B
△C1701	BZ110025	P2122B224M	CMP 0.22 UF 275V ECQUL
C1705	AE000699	C0PLRR7S2K	CC 560 PF 2KV R
C1707	BZ110203	C0PLRR7W2K	CC 820 PF 2KV RR
△C1708	BZ110226	C0JBB07H3K	CC 0.0022UF 2KV B
△C1710	BZ110226	C0JBB07H3K	CC 0.0022UF 2KV B
△C1711	AE002878	CD39E0MQ3M	CC 0.0047UF 250V
△C1714	AE000700	E52DHC681M	CE 680 UF 200V
△C1716	BZ110010	E02L03222M	CE 2200 UF 25V
△C1717	BZ110055	E5EZF4102M	CE 1000 UF 35V
△C1720	AD301025	E62NFB221M	CE 220 UF 160V
△C1728	AE001253	E02L01222M	CE 2200 UF 10V
C1729	AE000699	C0PLRR7S2K	CC 560 PF 2KV R
△C1732	BZ110078	E02L03102M	CE 1000 UF 25V
△C1733	AE000467	E02LU54R7M	CE 4.7 UF 50V
C3009	BZ110154	E02L00102M	CE 1000 UF 6.3V
<b>DIODES</b>			
D101	AD301638	0010E00330	INFRARED LED LTE-3271T-012A-O
D102	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D103	BZ410021	D97U05R61B	DIODE,ZENER MTZJ5.6B T-77
D105	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D106	AD300670	D97U01501B	DIODE,ZENER MTZJ15B T-77
D108	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
△D402	BZ410063	D2WTAU02A0	DIODE,SILICON AU02A-EIC
D403	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D404	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
△D408	BZ410021	D97U05R61B	DIODE,ZENER MTZJ5.6B T-77
D410	BZ410043	D2WT011E10	DIODE,SILICON 11E1-EIC
D411	BZ410021	D97U05R61B	DIODE,ZENER MTZJ5.6B T-77
△D412	BZ410063	D2WTAU02A0	DIODE,SILICON AU02A-EIC



# ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
<b>DIODES</b>				
D413	BZ410019	D97U03001B	DIODE,ZENER	MTZJ30B T-77
D414	BZ410019	D97U03001B	DIODE,ZENER	MTZJ30B T-77
△D415	BZ410063	D2WTAU02A0	DIODE,SILICON	AU02A-EIC
D416	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
D417	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D418	BZ410037	D97U03301B	DIODE,ZENER	MTZJ33B T-77
D419	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D601	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D602	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D603	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D605	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D801	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D802	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D803	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D804	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D805	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D806	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D1702	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D1703	AE000141	D97U02R71B	DIODE,ZENER	MTZJ2.7B T-77
△D1704	BZ410007	D23TGP15J0	DIODE,SILICON	RGP15J-G23
△D1705	BZ410062	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
△D1706	BZ410062	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
△D1707	BZ410007	D23TGP15J0	DIODE,SILICON	RGP15J-G23
D1709	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
△D1710	BZ410062	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
△D1711	BZ410062	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
D1712	BZ410067	D97U02R21B	DIODE,ZENER	MTZJ2.2B T-77
△D1713	BZ410010	D28T21DQN9	DIODE,SCHOTTKY	21DQ09N-TA2B1
D1715	AD300671	D97U01801B	DIODE,ZENER	MTZJ18B T-77
D1716	AD300731	D2WXN49370	DIODE,SILICON	1N4937
D1717	AD300671	D97U01801B	DIODE,ZENER	MTZJ18B T-77
△D1718	AD300731	D2WXN49370	DIODE,SILICON	1N4937
△D1719	BZ410115	D2LKB340L0	DIODE,SCHOTTKY	SB340L-6737
D1720	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D1721	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
△D1722	AD300731	D2WXN49370	DIODE,SILICON	1N4937
△D1723	AD301980	D2CF2016L0	DIODE,SILICON	FE201-6L49
D1724	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D1726	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D1727	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D1728	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D1730	AD301980	D2CF2016L0	DIODE,SILICON	FE201-6L49
D1732	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D1733	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
△D1734	BZ410010	D28T21DQN9	DIODE,SCHOTTKY	21DQ09N-TA2B1
D2201	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D2205	BZ410087	0021E2Q140	LED	LTL-1CHEE-002A
D2206	BZ410087	0021E2Q140	LED	LTL-1CHEE-002A
D2207	BZ410087	0021E2Q140	LED	LTL-1CHEE-002A
D2601	BZ410121	DDARDS1200	DIODE,SILICON	KDS120RTK
D3001	BZ410037	D97U03301B	DIODE,ZENER	MTZJ33B T-77
D3002	BZ410021	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D3003	BZ410090	D97U04R71B	DIODE,ZENER	MTZJ4.7B T-77
D3004	BZ410077	D2WXS1400	DIODE,SCHOTTKY	SB140-EIC
D3005	BZ410012	D28TQS04N0	DIODE,SCHOTTKY	11EQS04N-TA1B2
D3007	BZ410043	D2WT011E10	DIODE,SILICON	11E1-EIC
D3008	BZ410010	D28T21DQN9	DIODE,SCHOTTKY	21DQ09N-TA2B1
D3011	BZ410010	D28T21DQN9	DIODE,SCHOTTKY	21DQ09N-TA2B1
D4001	BZ410119	DDRL41480	DIODE,SILICON	MCL4148
D4201	BZ410021	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D4204	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D4205	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D4207	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D5501	BZ410012	D28TQS04N0	DIODE,SCHOTTKY	11EQS04N-TA1B2
D5502	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
<b>ICS</b>				
IC101	AE003125	I51F58076A	IC	OEC8076A
IC103	AD301641	I9UF032310	IC	PST3231NR
IC199	AE003126	A5L0024015	IC	S-24C04BDP-LA
IC302	AD301983	I01FF58910	IC	AN5891SA-E1V
△IC352	AD302184	I0FSP7522N	IC	AN7522N

# ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	ICS	Description
△IC401	BZ611025	I03TD80400	IC	LA78040
IC601	AD301765	I03FC63190	IC	LA76319M-MPB-E
IC602	AE000143	I1KF98L100	IC	KIA78L10F-RTF
IC1501	AD300609	I05FE90A45	IC	TC90A45F
IC1502	AD301988	I0UF015010	IC	MM1501XNRE
IC1504	AD301988	I0UF015010	IC	MM1501XNRE
IC1505	AD301927	I0UF015040	IC	MM1504XNRE
△IC1701	AD301771	000220001W	PHOTO COUPLER	PS2561L1-1-V(W)
△IC1702	AD302211	I1KJ9A431A	IC	KIA431A-AT
IC2301	BZ611126	I03F065600	IC	LA6560
IC2601	AE002837	ICQK067080	IC	ZR36708TQC
IC2602	AD301770	I07E00358F	IC	BA10358F-E2
△IC3001	AD301931	I1KA78R050	IC	KIA278R05PI
△IC3002	AD301929	I1KA78R090	IC	KIA278R09PI
△IC3003	AD301931	I1KA78R050	IC	KIA278R05PI
IC3004	AD301931	I1KA78R050	IC	KIA278R05PI
IC4001	AE000842	ICQK067620	IC	ZR36762
IC4002	BZ611124	I5HJ004BF0	IC	S-24C04BFJ-TB
IC4003	BZ611130	I0GF9XZ010	IC	PQ070XZ01ZP
IC4005	AE000843	IF9J0164A7	IC	M12L64164A-7T
IC4007	AE003430	ICMJ0F8009	IC	SST39VF800-70-4C-EK
IC4501	BZ611095	I03F3205M0	IC	LA71205M-MPB
IC5501	BZ611114	I01F63FBP0	IC	AN3663FBP
IC8001	AD301988	I0UF015010	IC	MM1501XNRE
IC8002	AD301988	I0UF015010	IC	MM1501XNRE
IC8004	AE001295	I0QJ045800	IC	NJM4580M(Te1)
IC8502	AE002835	I17F02KEG0	IC	PCM1742KEG/2K
<b>TRANSISTORS</b>				
Q101	BZ410097	0000M00390	PHOTO TRANSISTOR	ST-304L
Q102	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q103	BZ410097	0000M00390	PHOTO TRANSISTOR	ST-304L
Q104	BZ410106	0002700680	PHOTO COUPLER	RPI-352C40N
Q105	BZ410106	0002700680	PHOTO COUPLER	RPI-352C40N
Q106	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q107	BZ410107	0002700690	PHOTO COUPLER	RPI-303
Q108	BZ410107	0002700690	PHOTO COUPLER	RPI-303
Q110	BZ510020	TNYJB05001	COMPOUND TRANSISTOR	DTC114EKAT146
Q112	AE002626	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q114	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q116	AE002626	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q350	AE002626	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
△Q401	BZ510097	TCAT03227Y	TRANSISTOR,SILICON	KTC3227_Y-AT
△Q403	BZ510040	TDUU024990	TRANSISTOR,SILICON	2SD2499(LB0EC1)
△Q406	BZ510004	TA3T016240	TRANSISTOR,SILICON	2SA1624-AA
Q407	BZ510096	TNATB03005	COMPOUND TRANSISTOR	KRC102MAT
Q408	AD300674	TCAT032070	TRANSISTOR,SILICON	KTC3207-AT
Q409	BZ510004	TA3T016240	TRANSISTOR,SILICON	2SA1624-AA
Q601	BZ510039	TNYTB05001	COMPOUND TRANSISTOR	DTC114EKT147
Q602	AE002626	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q605	BZ510025	TPYJB05001	COMPOUND TRANSISTOR	DTA114EKAT146
Q606	AE002626	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
△Q802	BZ510009	TC3F042170	TRANSISTOR,SILICON	2SC4217(D,E)-RAC
△Q803	AD301032	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
△Q804	BZ510009	TC3F042170	TRANSISTOR,SILICON	2SC4217(D,E)-RAC
△Q805	AD301032	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
△Q806	BZ510009	TC3F042170	TRANSISTOR,SILICON	2SC4217(D,E)-RAC
△Q807	AD301032	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
Q1501	AE002626	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q1502	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q1503	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q1702	BZ510069	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
△Q1705	BZ510098	T220033260	FET	2SK3326(2)
△Q1706	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q2201	BZ510020	TNYJB05001	COMPOUND TRANSISTOR	DTC114EKAT146
Q2202	BZ510020	TNYJB05001	COMPOUND TRANSISTOR	DTC114EKAT146
Q2203	BZ510020	TNYJB05001	COMPOUND TRANSISTOR	DTC114EKAT146
Q2601	BZ510112	T67J1036K0	TRANSISTOR,SILICON	2SA1036KT146
Q2602	BZ510112	T67J1036K0	TRANSISTOR,SILICON	2SA1036KT146
Q2603	BZ510113	T27T030180	FET	2SK3018
Q2604	BZ510113	T27T030180	FET	2SK3018
Q2605	BZ510113	T27T030180	FET	2SK3018

# ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description
<b>TRANSISTORS</b>			
Q3001	AE002626	T8YJ2412K0	2SC2412KT146 R,S
△ Q3002	BZ510105	TCAT03209Y	KTC3209_Y-AT
△ Q3003	BZ510105	TCAT03209Y	KTC3209_Y-AT
Q3004	AE002626	T8YJ2412K0	2SC2412KT146 R,S
△ Q3005	AD301934	TBA0013660	KTB1366(O,Y)
Q3006	AE002626	T8YJ2412K0	2SC2412KT146 R,S
△ Q3007	BZ510057	TAAT01281Y	KTA1281_Y
Q3008	BZ510081	TPYJA05001	DTA143EKAT146
Q3009	BZ510020	TNYJB05001	DTC114EKAT146
Q3010	BZ510105	TCAT03209Y	KTC3209_Y-AT
Q3011	AE002626	T8YJ2412K0	2SC2412KT146 R,S
△ Q3014	BZ510105	TCAT03209Y	KTC3209_Y-AT
Q3015	AE002626	T8YJ2412K0	2SC2412KT146 R,S
Q4004	BZ510109	TCAA3875SY	KTC3875S_Y_RTK
Q4201	AE002626	T8YJ2412K0	2SC2412KT146 R,S
Q4202	BZ510026	TPYJC05001	DTA124EKAT146
Q4203	AE002626	T8YJ2412K0	2SC2412KT146 R,S
Q4204	BZ510021	TNYJC05001	DTC124EKAT146
Q4210	BZ510001	T6YJ1037K0	2SA1037AKT146R,S
Q4211	AE002626	T8YJ2412K0	2SC2412KT146 R,S
Q4212	BZ510001	T6YJ1037K0	2SA1037AKT146R,S
Q4501	BZ510109	TCAA3875SY	KTC3875S_Y_RTK
Q4502	BZ510109	TCAA3875SY	KTC3875S_Y_RTK
Q4503	BZ510026	TPYJC05001	DTA124EKAT146
Q4504	BZ510070	TCAT032034	KTC3203_Y-AT
Q4505	BZ510073	TAATA12660	KTA1266-AT(Y,GR)
Q4506	AE002626	T8YJ2412K0	2SC2412KT146 R,S
Q4507	AE002626	T8YJ2412K0	2SC2412KT146 R,S
Q4509	BZ510001	T6YJ1037K0	2SA1037AKT146R,S
Q4511	BZ510001	T6YJ1037K0	2SA1037AKT146R,S
Q8002	AE002626	T8YJ2412K0	2SC2412KT146 R,S
Q8006	AE002626	T8YJ2412K0	2SC2412KT146 R,S
Q8007	BZ510021	TNYJC05001	DTC124EKAT146
Q8502	BZ510108	TAAA1504SY	KTA1504S_Y_RTK
Q8503	BZ510108	TAAA1504SY	KTA1504S_Y_RTK
Q8504	BZ510108	TAAA1504SY	KTA1504S_Y_RTK
<b>COILS &amp; TRANSFORMERS</b>			
L001	BZ310001	021673101J	100 UH
L301	BZ310156	021375101K	100 UH
L402	BZ310063	022100027A	ELH5L4113
L403	BZ310004	021679472K	4.7 MH
L601	BZ310041	02167F101J	100 UH
L602	BZ310156	021375101K	100 UH
L603	BZ310118	02AHB9A972	W5T29X7.5X19
L604	BZ310118	02AHB9A972	W5T29X7.5X19
L804	BZ310156	021375101K	100 UH
L1501	AD300612	02167F100J	10 UH
L1502	BZ310043	021LA6150K	15 UH
L1504	AD300123	021673151K	150 UH
L1505	BZ310042	021LA6101K	100 UH
L1506	BZ310042	021LA6101K	100 UH
△ L1701	BZ310180	029T000105	2R2A752F28
△ L1703	BZ310066	028R200024	8R200024
L1704	AD301539	02AHB0A0A4	W5T_20*10*10A
L3001	AD301785	02167E100K	10 UH
L3002	AD301785	02167E100K	10 UH
L4001	BZ310191	02167F2R2J	2.2 UH
L4002	BZ310118	02AHB9A972	W5T29X7.5X19
L4205	BZ310041	02167F101J	100 UH
L4502	BZ310114	031626009R	1626009
L4504	BZ310041	02167F101J	100 UH
L4505	BZ310040	02167F470J	47 UH
L4506	BZ310040	02167F470J	47 UH
L4509	BZ310156	021375101K	100 UH
L5501	BZ310042	021LA6101K	100 UH
L5502	BZ310039	02167F220J	22 UH
L5503	BZ310039	02167F220J	22 UH
L5504	BZ310039	02167F220J	22 UH
L8001	BZ310041	02167F101J	100 UH
L8002	BZ310042	021LA6101K	100 UH
L8003	BZ310041	02167F101J	100 UH

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L8502	AE000828	02167F1R0K	COIL	1 UH
L8503	AE000828	02167F1R0K	COIL	1 UH
L8504	AE000828	02167F1R0K	COIL	1 UH
T401	BZ310172	045013003J	TRANS,HORIZONTAL DRIVE	ETH14Y47AY
△ T1701	AD301935	048142065S	TRANSFORMER,SWITCHING	8142065S
<b>JACKS</b>				
△ J801	AD301936	066F130021	SOCKET,CATHODE RAY,TUBE	ISHS62S
△ J2201	BZ614361	060J131015	HEADPHONE JACK	MSJ-2000
J2202	AE002949	060J421036	RCA JACK	MTJ-032-05A-30-FE
J2203	AE002950	060J421037	RCA JACK	MTJ-032-05A-32-FE
J2204	AE002951	060J421030	RCA JACK	MTJ-032-05A-31-FE
J4201	AD301038	060J431019	RCA JACK	MSP-213V2-432 PBSN
J4202	BZ614399	060J411018	RCA JACK	MSP-213V1-432 PBSN
J8007	BZ614400	060J401082	RCA JACK	MSP-251V-05PBSN
<b>SWITCHES</b>				
SW101	BZ612016	0508S11001	SWITCH (LEAF)	LSA-1144EAU
SW2201	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2202	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2203	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2204	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2205	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2206	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2207	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2251	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
<b>Location No.</b>	<b>TSB P/N</b>	<b>Reference No.</b>	<b>Description</b>	
<b>SWITCHES</b>				
SW2252	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2253	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2254	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2255	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2256	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2257	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2258	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
<b>VARIABLE RESISTORS</b>				
VR404	BZ210218	V1K63H3BTE	VOLUME,SEMI FIXED	NVG6TLTAB222
VR1701	AD301937	V1K6314BTE	VOLUME,SEMI FIXED	NVG6TLTAB103
<b>P.C.BOARD ASSEMBLIES</b>				
PCB010	AE003127	A5L0024010	PCB ASS'Y	VMC293B
PCB080	AE003128	A5L0024080	PCB ASS'Y	TMC564B
PCB110	AE003129	A5L0024110	PCB ASS'Y	TCC426B
PCB130	AE003130	A5L0024130	PCB ASS'Y	VMC319A
PCB270	AE003131	A5L0024270	PCB ASS'Y	TECB10B
<b>MISCELLANEOUS</b>				
B401	BZ310121	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B402	BZ310121	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B403	BZ310121	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B1703	BZ310129	024HT03564	CORE,BEADS	W4BRH3.5X6X1.0
B2201	BZ310129	024HT03564	CORE,BEADS	W4BRH3.5X6X1.0
B2601	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B2602	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B2603	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B2604	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B2605	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4001	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4002	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4003	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4004	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4005	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4006	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4007	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4008	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4009	BZ310122	024HT03563	CORE,BEADS	W4BRH3.5X6X1.0X2
B4010	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B8001	BZ310122	024HT03563	CORE,BEADS	W4BRH3.5X6X1.0X2
B8502	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B8503	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
BL001	BZ310014	023C00022A	COIL,BALUN	HPN-01
BT001	AE000012	1412004008	BATTERY,MANGAN	R03(AB)E_2P_G
BT002	AE000012	1412004008	BATTERY,MANGAN	R03(AB)E_2P_G
CD002	BZ614411	06CU011902	CORD,CONNECTOR	CU011902
CD303	BZ614424	06CU149001	CORD,CONNECTOR	CU149001
CD602	AD302218	06CU291701	CORD,CONNECTOR	CU291701
CD603	AE000133	06CU284501	CORD,CONNECTOR	CU284501

# ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description
<b>MISCELLANEOUS</b>			
CD604	AE000132	06CU282401	CORD,CONNECTOR
CD802	BZ614310	WCL6844038	FLAT CABLE
CD803	BZ614378	06CU823001	CORD,CONNECTOR
CD805	BZ614378	06CU823001	CORD,CONNECTOR
CP001	BZ614444	069D01001A	CONNECTOR PCB SIDE
CP101	BZ614289	06972C0010	CONNECTOR PCB SIDE
CP303	AD301045	069S140419	CONNECTOR PCB SIDE
△CP404	BZ614303	069S450089	CONNECTOR PCB SIDE
CP601	AD301943	069S240639	CONNECTOR PCB SIDE
CP602	BZ614462	067U009039	WIRE HOLDER
CP603	AD301944	067U008029	WIRE HOLDER
CP604	AD301796	069S280629	CONNECTOR PCB SIDE
CP803	BZ614269	069S320010	CONNECTOR PCB SIDE
CP805	BZ614269	069S320010	CONNECTOR PCB SIDE
△CD1702	BZ614407	120R415906	CORD,AC BUSH
CD2251	BZ614408	06CU220701	CORD,CONNECTOR
CD4002	AD301946	06CU2B3301	CORD,CONNECTOR
CD4501	BZ614373	122F061502	CORD,JUMPER
CD8501	AE000134	122H0C2204	CORD,JUMPER
CP1702	AD301944	067U008029	WIRE HOLDER
△CP1704	AD300687	069S420110	CONNECTOR PCB SIDE
CP1707	BZ614444	069D01001A	CONNECTOR PCB SIDE
CP1708	BZ614444	069D01001A	CONNECTOR PCB SIDE
CP2201	BZ614416	069S220629	CONNECTOR PCB SIDE
CP2601	AD302396	069JYOT099	CONNECTOR PCB SIDE
CP2602	AD301858	069JV80180	CONNECTOR PCB SIDE
CP2603	AD301795	069S230639	CONNECTOR PCB SIDE
CP4501	BZ614011	0697290620	CONNECTOR PCB SIDE
CP4502	BZ614050	069J760029	CONNECTOR PCB SIDE
CP4503	AD301649	067U002019	WIRE HOLDER
CP602B	BZ614458	069S290629	CONNECTOR PCB SIDE
CP603B	AD301796	069S280629	CONNECTOR PCB SIDE
CP8001	BZ614214	069S2B0629	CONNECTOR PCB SIDE
CP8002	AD301797	069J7C0029	CONNECTOR PCB SIDE
CP802A	BZ614276	067U005049	WIRE HOLDER
CP802B	BZ614276	067U005049	WIRE HOLDER
CP8502	AD301798	069J7C0019	CONNECTOR PCB SIDE
CUS011	BZ710148	800WFAA007	CUSHION B
CUS012	BZ710149	800WFAA008	CUSHION C
EL001	BZ614044	124120301A	EYE LET
EL002	BZ614043	124116281A	EYE LET
EL003	BZ614044	124120301A	EYE LET
EL004	BZ614043	124116281A	EYE LET
△F1701	AD301046	081PC6R305	FUSE
△FB401	AD302038	043220058F	TRANSFORMER,FLYBACK
FH1701	AE002634	06710T0009	HOLDER,FUSE
FH1702	AE002634	06710T0009	HOLDER,FUSE
OS2201	AD301949	0773071003	REMOTE RECEIVER
△RY1701	AD300114	0560V20115	RELAY
△SP351	BZ614381	070C546004	SPEAKER
△SP352	BZ614381	070C546004	SPEAKER
TM101	AD301950	076D0FG020	TRANSMITTER
△TU001	AE000273	0163300005	RF UNIT
△TH1701	BZ410079	DF5EL3R0A0	DEGAUSS ELEMENT
△V801	AD302039	098Q210448	CRT W/DY
X101	BZ613006	100DA32R01	CRYSTAL
X102	BZ613033	100CT01403	CRYSTAL
X601	AD301951	100CT3R532	CRYSTAL
X4001	AD301803	100BT02701	CRYSTAL
X4501	BZ613017	100CT3R502	CRYSTAL
			CU282401
			AWM2468 AWG26 5C GRAY 440MM
			CU823001
			CU823001
			003P-2100
			TMC-J12P-B2
			A2502WV2-4P
			A1561WV2-A5P
			A2001WR2-4P
			B2013H02-9P
			B2013H02-8P
			A2001WV2-8P
			A2361WV2-2P
			A2361WV2-2P
			0R415906
			CU220701
			CU2B3301
			2F061502
			2H0C2204
			B2013H02-8P
			A1561WV2-2P
			003P-2100
			003P-2100
			A2001WV2-2P
			IMSA-9631S-24Y901
			IMSA-9615S-08C-PP
			A2001WR2-3P
			TOC-C09X-A1
			IMSA-9604S-06Z14
			B2013H02-2P
			A2001WV2-9P
			A2001WV2-8P
			A2001WV2-11P
			IMSA-9604S-12Z14
			B2013H02-5P
			B2013H02-5P
			IMSA-9604S-12Z13
			XRY20X30BD
			XRY16X28BD
			XRY20X30BD
			XRY16X28BD
			51MS063L
			FJN20A003
			EYF-52BCY
			EYF-52BCY
			RPM7138-WH10
			ALKS321
			SG04H02BRA
			SG04H02BRA
			ORV201N36010
			115-V-K015AR_B
			ZPB45BL3R0A
			A51AKL13X04
			DT-26
			HC-49/U-S
			HC-49/U-S
			HC-49U/S
			HC-49/U

# ELECTRICAL REPLACEMENT PARTS LIST

## RESISTOR

RC..... CARBON RESISTOR

## CAPACITORS

CC..... CERAMIC CAPACITOR  
CE..... ALUMI ELECTROLYTIC CAPACITOR  
CP..... POLYESTER CAPACITOR  
CPP..... POLYPROPYLENE CAPACITOR  
CPL..... PLASTIC CAPACITOR  
CMP..... METAL POLYESTER CAPACITOR  
CMPL..... METAL PLASTIC CAPACITOR  
CMPP..... METAL POLYPROPYLENE CAPACITOR

# **TOSHIBA CORPORATION**

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